

TOPOGRAPHIC BASE: UNITED STATES GEOLOGICAL SURVEY, 7.5 MINUTE QUADRANGLE SERIES; NORVELL QUADRANGLE, MICHIGAN 1975; EDITED 1980



WESTSHORE
CONSULTING
Engineers ■ Scientists ■ Surveyors

www.WestshoreConsulting.com

Muskegon, MI
(231) 777-3447

Grand Haven, MI
(616) 844-1260

Manistee, MI
(231) 920-5818

Client:

West Bay Exploration Company

Site:

Haystead 9 SWD well site, Section 9, T4S, R2E,
Norvell Township, Jackson County, Michigan

SITE LOCATION MAP

Checked: WAV

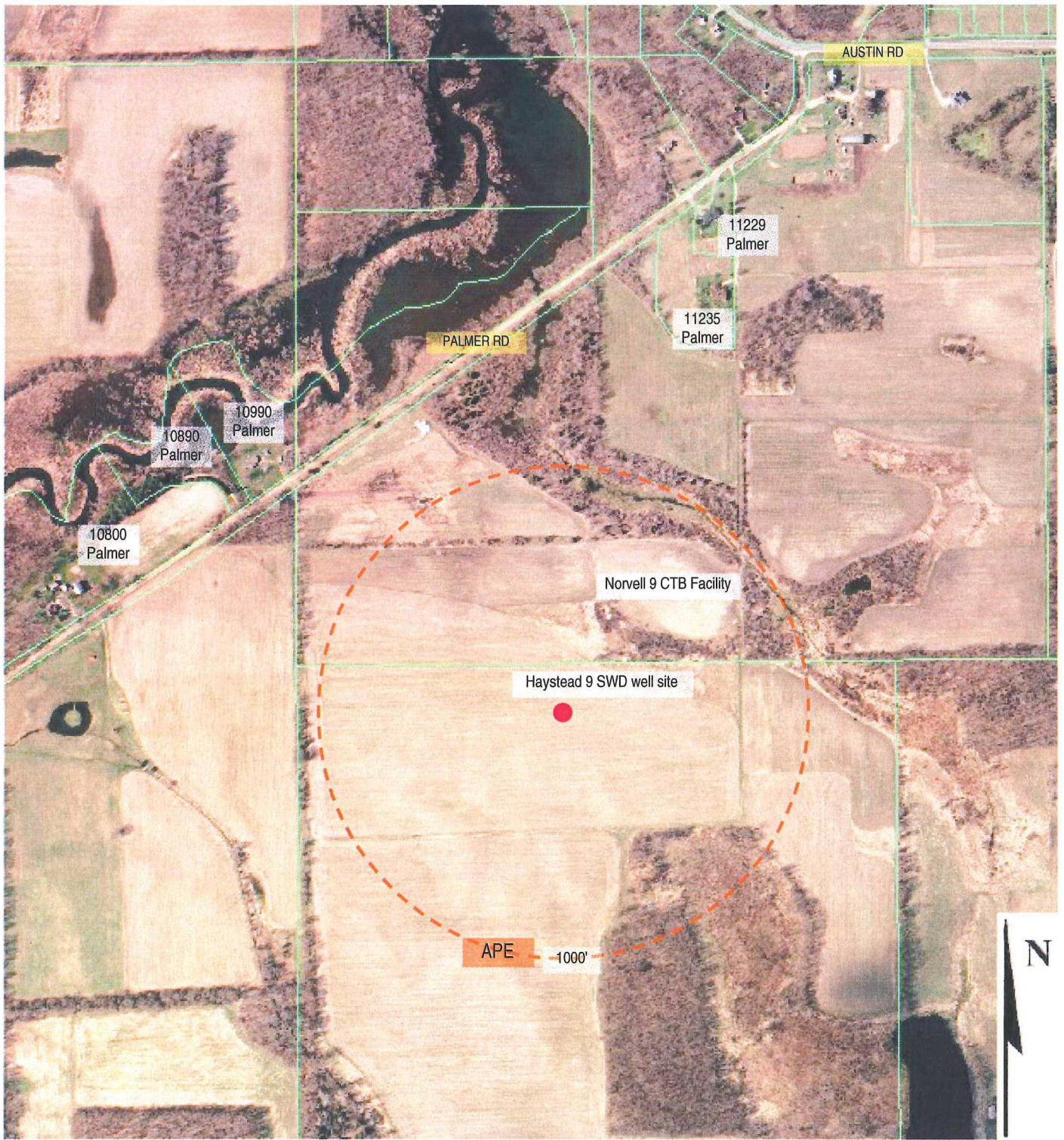
Date: 06/08/11

Drawn by: JLG

Date: 06/08/11

File No.: 323-130

Figure: **1**



VIEW OBTAINED FROM: Jackson County GIS Interactive Mapping Application, Aerial Photograph dated 2007 <http://www.co.jackson.mi.us/CountyGIS/viewer.htm>



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West Bay Exploration Company

Site:

Haystead 9 SWD well site,
Section 9, T4S, R2E, Norvell Township,
Jackson County, Michigan

**SITE
MAP**

Checked: WAV

Date: 06/03/11

Drawn by: JLG

Date: 06/03/11

File No.: 323-130

Figure: **2**



At Haystead 9 SWD Well Site - View Looking North

1



At Haystead 9 SWD Well Site - View Looking South

2

Site: Haystead 9 SWD well site, Section 9, T4S, R2E, Norvell Township, Jackson County, Michigan

Client: West Bay Exploration Company

File No.: 323-130

Photos By: S. Vallier

Date: 06/02/11



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At Haystead 9 SWD Well Site - View Looking East

3



At Haystead 9 SWD Well Site - View Looking West

4

Site: Haystead 9 SWD well site, Section 9, T4S, R2E, Norvell Township, Jackson County, Michigan

File No.: 323-130

Photos By: S. Vallier

Client: West Bay Exploration Company

Date: 06/02/11



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House at 11235 Palmer Road - Located North of Haystead 9 SWD well site - on South Side of Palmer Road

5



House at 11229 Palmer Road - Located North of Haystead 9 SWD well site - on South Side of Palmer Road

6

Site: Haystead 9 SWD well site, Section 9, T4S, R2E, Norvell Township, Jackson County,
Michigan

Client: West Bay Exploration Company

File No.: 323-130

Photos By: S. Vallier

Date: 06/02/11



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7 House at 10990 Palmer Road
 - Located West-Northwest of Haystead 9 SWD well
 site - on North Side of Palmer Road



8 House at 10890 Palmer Road
 - Located West-Northwest of Haystead 9 SWD well
 site - on North Side of Palmer Road



9 House at 10800 Palmer Road
 - Located West-Northwest of Haystead 9 SWD well
 site - on North Side of Palmer Road

Site: Haystead 9 SWD well site, Section 9, T4S, R2E, Norvell Township, Jackson County,
 Michigan

Client: West Bay Exploration Company

File No.: 323-130

Photos By: S. Vallier

Date: 06/02/11



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Appendix 4

West Bay Exploration company

13685 S. West Bay Shore / Suite 200
Traverse City, MI 49684
231-946-0200 / Fax: 231-946-8180

5555 N. Hogback Road
Fowlerville, MI 48836
517-223-4011 / Fax: 517-223-4020

April 18, 2011

Permits and Bonding Unit
Office of Geological Survey
Oil and Gas Division
PO Box 30256
Lansing, MI 48909-7756

RE: Haystead 1-9 SWD

Enclosed, please find the materials necessary to apply for a permit to drill the Haystead 1-9 SWD.

1. Application for Permit to Drill and Operate A Well (7200-1)
2. Survey Record of Well Location (7200-2)
3. Supplemental Plat Drawing
4. Wellhead Blowout Control System & Testing Procedures (7200-4)
5. Soil Erosion and Sedimentation Control Plan (7200-18)
6. Environmental Impact Assessment (7200-19)
7. Injection well data (7200-14) and required attachments
8. Letter to Jackson County Clerk's Office
9. Notification of Landowner letter
10. Credit Card Transaction Authorization

If you have any questions regarding the above, please feel free to call us at 231-946-0200. Thanks so much.

Sincerely,


Anni Baker
West Bay Exploration Co.

West Bay Exploration company

13685 S. West Bay Shore / Suite 200
Traverse City, MI 49684
231-946-0200 / Fax: 231-946-8180

5555 N. Hogback Road
Fowlerville, MI 48836
517-223-4011 / Fax: 517-223-4020

April 18, 2011

Mr. Harold and Mrs. Harriet Haystead
11451 Austin Road
Brooklyn, MI 49230

RE: Haystead 9 SWD


Dear Mr. & Mrs. Haystead:

Enclosed, please find copies of the Application(s) for Permit to Drill, filed by our company with the Department of Environmental Quality-Geological Survey Division.

As you recall with the agreements signed, West Bay is in the process of permitting a saltwater disposal well. The permits required for this are not only the State of Michigan drilling permit, but also, an EPA injection well permit. In order to obtain the EPA permit, the Michigan permit needs to be issued. Once both the permits are issued, we will be in contact with you, in regards to the actual timing of the drilling.

Thank you again, for allowing us to work with you on these projects. We are most appreciative of having landowners like you and your family.

Sincerely,



Anni Baker

Permits & Production
Operations Department
(231)946-0200- phone
anni@wbeco.net - e mail

West Bay Exploration company

13685 S. West Bay Shore / Suite 200
Traverse City, MI 49684
231-946-0200 / Fax: 231-946-8180

5555 N. Hogback Road
Fowlerville, MI 48836
517-223-4011 / Fax: 517-223-4020

April 18, 2011

County of Jackson
County Clerk's Office
312 South Jackson Street
Jackson, MI 49201

RE: Haystead 1-9 SWD

To Whom It May Concern:

Enclosed, please find an Application for Permit to Drill, filed by our company with the Department of Environmental Quality-Geological Survey Division.

This letter serves as notification of our intent to drill the subject well in Jackson County in the near future.

Should you have any questions, please feel free to contact our office at (231)946-0200

Sincerely,


Ann M. Baker
Operations & Production
Department



State of Michigan
Department of Environmental Quality
Geological and Land Management Division
P.O. Box 30256
Lansing, MI 48909-7756

PERMIT TO

☒ **DRILL AND OPERATE** ☐ **DEEPEN AND OPERATE**

GRANTED UNDER THE PROVISIONS OF
Part 615 Supervisor of Wells, Act 451, PA 1994, as amended

Violation of and/or non-compliance with the provisions of this act or its rules, instructions or orders of the supervisor, or these permit conditions may result in penalties. This permit includes as requirements all the operations and methods proposed by the applicant in the application to drill, unless rejected or altered by the DEQ. This permit is also subject to the general and specific conditions identified on this page and/or attached to it. Initiation of any work under this permit confirms the permittee's acceptance and agreement to comply with its terms and conditions.

| | | |
|---|---|-----------------------------|
| PERMIT NO. 60425 | ISSUE DATE 9/8/2011 | EXPIRATION DATE 9/8/2013 |
| WELL NAME AND NUMBER HAYSTEAD 9 SWD | | |
| FORMATION AT TOTAL DEPTH SALINA | COMPLETION FORMATION SALINA | |
| PERMITTED TOTAL DEPTH (MEASURED) 3100 ft. | PERMITTED TOTAL DEPTH (TVD) 3100 ft. | |
| TYPE OF PERMIT Brine Disposal Well | API NUMBER 21-075-60425-00-00 | |
| ISSUED TO: WEST BAY EXPLORATION CO STE 200 13685 S WEST BAYSHORE DR TRAVERSE CITY, MI 49684 | | |

LOCATION AND FOOTAGES: SHL: NE NW SW, SEC 9, 4S 2E, NORVELL TWP, JACKSON CO.
2459 FT. FROM S AND 1122 FT. FROM W SECTION LINE.

CASING AND SEALING REQUIREMENTS

| HOLE DEPTH | HOLE DIA. | CASING O.D. | WT./FT. | GRADE | CONDITION | DEPTH (M.D.) | SACKS CMT | CEMENT TOP | MUD WT. |
|------------|-----------|-------------|---------|-------|-----------|--------------|-----------|------------|---------|
| 350' | 14 3/4" | 11 3/4" | 42 | H-40 | NEW | 350' | 335 | SURFACE | 8.4 |
| 900' | 10 5/8" | 8 5/8" | 24 | J-55 | NEW | 900' | 220 | SURFACE | 8.5 |
| 2870' | 7 7/8" | 5 1/2" | 15.5 | J-55 | NEW | 2870' | 450 | SURFACE | 9.7 |
| 3100' | 4 3/4" | Open Hole | | | | 3100' | | | 9.7 |

SPECIFIC PERMIT CONDITIONS

1. Earthen berms and silt fence shall be used around pad perimeter to prevent off-site sedimentation.
2. An existing 5" PVC temporary water well at SW corner of pad can be used for onsite freshwater. It shall not be used for drinking water and shall be plugged upon well completion.
3. Pit will be in-ground and used as working pit. Pit contents to be solidified and cuttings hauled to an approved landfill.
4. Area Geologist - Kristy Shimko 517-373-9409 - is to be notified prior to pit excavation.
5. Well control equipment shall be installed on the 11 3/4" and 8 5/8" casing. All well control features shall be tested according to the Rule 324.406.
6. Pursuant to RULE 407(7)(b), drilling fluids generated or utilized while drilling below the base of the Detroit River Anhydrite SHALL NOT be placed in the lined pit. Cuttings and the solid fraction of drilling muds generated or utilized while drilling below the base of the Detroit River Anhydrite may be placed in the lined reserve pit if they DO NOT contain free liquids as determined by the US EPA, paint filter test, method 9095, September 1986 edition. Drilling muds and cuttings which contain weighting or lost circulation materials, and which cannot reasonably be treated to eliminate free liquids may be placed in the reserve pit if approved by the authorized representative of the supervisor.
7. Copies of all Electric logs run on this well shall be submitted to the Lansing Office of the Geological Survey on paper and electronic format. Log ASCII Standard (LAS) and Tag Image File Format (TIF) files shall be submitted on a compact disc. These files should be named using the well's permit number with the log type name.

RECEIVED

SEP 20 2011

UIC BRANCH
EPA, REGION 5

GENERAL PERMIT CONDITIONS

1. The permittee is required to give notice to public utilities in accordance with Act 53, PA 1974, M.C.L. 460.701-460.718.
2. This permit does not convey property rights in either real estate or material, neither does it authorize any injury to any public or personal property.
3. This permit does not preclude the necessity of obtaining other local, state, or federal permits which may apply to the drilling or operation of this well.
4. All trash and garbage shall be removed from the drill site at the completion of drilling, no garbage may be buried on site.
5. This permit allows a well containing hydrogen sulfide to be drilled and tested subject to the Hydrogen Sulfide Management Provisions of the Rules promulgated under Part 615, 1994 PA 451, as amended. Contact the Air Quality Division prior to producing a sour well to determine if an Air Quality Installation or Operation Permit is required.

OFFICE TO BE NOTIFIED PRIOR TO PREPARING LOCATION
AND PRIOR TO MOVING IN DRILLING EQUIPMENT

Lansing (517) 241-1515

PERMIT ISSUED FOR THE SUPERVISOR OF WELLS BY

**SURVEY RECORD OF WELL LOCATION**

This information is required by authority of Part 615 Supervisor of Wells, or Part 625 Mineral Wells, of Act 451 PA 1994, as amended, in order to obtain a drilling permit.

Applicant

West Bay Exploration Company

Well name and number

Haystead 9 SWD

1a. Surface location

Township

County

NE 1/4 of NW 1/4 of SW 1/4 of section 9 T 4S R 2E

Norvell

Jackson

1b. If this is a directional well, bottom hole location will be

Township

County

1/4 of 1/4 of 1/4 of section T R

Instructions: Outline drilling unit for oil/gas wells (Part 615) or property boundary for mineral wells (Part 625) and spot well location on plat shown. Locate the well in two directions from the nearest section, quarter section, and unit (or property, Part 625) lines.

2. The surface location is

2459 ft. from nearest (N/S) S section line

1122 ft. from nearest (E/W) W section line

and

158 ft. from nearest (N/S) N quarter section line

1496 ft. from nearest (E/W) E quarter section line

3. Bottom hole will be (if directional)

ft. from nearest (N/S) section line

ft. from nearest (E/W) section line

and

ft. from nearest (N/S) quarter section line

ft. from nearest (E/W) quarter section line

4. Bottom hole will be (directional or straight)

ft. from nearest (N/S) drilling unit line

ft. from nearest (E/W) drilling unit line

5. Show access to stake on plat and describe if it is not readily accessible. Go south on I-127 to M-50. Go east on M-50 8 miles to Village of Napoleon, continue east for 2.5 miles on Austin Road. Go south and west on Palmer Road for 0.8 miles to farm lane to south. Take farm lane south for 0.3 miles, then east on farm lane 0.25 miles to well site.

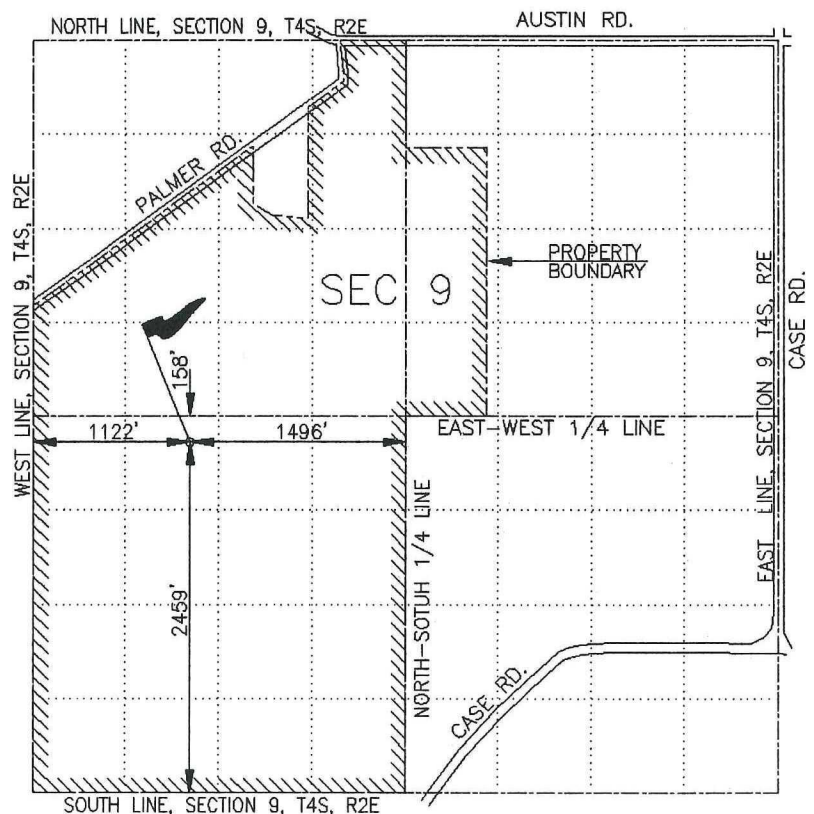
6. Zoning☐ Residential, effective date

Initial date of residential zoning

☒ Other Agricultural

PLAT BELOW REPRESENTS ONE FULL SECTION
(1 MILE SQUARE)

N ↑

**ON SEPARATE PLAT OR PLOT PLAN, LOCATE, IDENTIFY AND SHOW DISTANCES TO:**

- A. All roads, power lines, buildings, residences, fresh water wells, and other man-made features, within 600 feet of the stake.
- B. All lakes, streams, wetlands, drainage-ways, floodplains, environmentally sensitive areas, natural rivers, critical dune areas, and threatened or endangered species within 1320 feet of the stake.
- C. All type I and IIa public water supply wells within 2000 feet and all type IIb and III public water supply wells within 800 feet of the well stake.

Name of individual who surveyed site

Stephen V. Vallier, P.S.

Company

West Bay Consulting

Date of survey

09/28/2010

Address

2534 Black Creek Road, Muskegon, MI 49444

Phone

231-777-3447

I CERTIFY THE ABOVE INFORMATION IS COMPLETE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

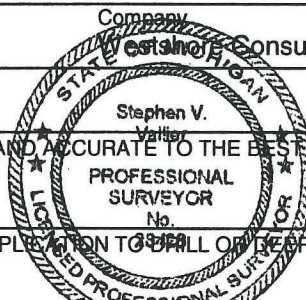
Signature of licensed surveyor (affix seal)

PROFESSIONAL SURVEYOR

No.

Date

3/17/11



**SOIL EROSION & SEDIMENTATION
CONTROL PLAN**

By authority of Part 91, and Part 615 or Part 625 of Act 451
PA 1994, as amended. Non-submission and/or falsification of
this information may result in fines and/or imprisonment.

☐ Part 615 Oil/Gas Well ☒ Part 625 Mineral Well

1. Name and address of applicant

West Bay Exploration Company
13685 South West Bay Shore Drive, Suite 200
Traverse City, MI 49684

Phone: (231) 946-0200 Fax: (231) 946-8180

2. Well or project name:

Haystead 9 SWD

3. Well or project location:

Section(s) 9 T4S R2E

4. Name and address of County or local Enforcement Agent (CEA)

Jackson County Health Department
1715 Lansing Avenue, Suite 221
Jackson, MI 49202
Phone: (517) 788-4420 Fax: (517) 788-4373

5. Township

Norvell

6. County

Jackson

7. Date earth changes expected to start

Spring 2011

8. Date of expected completion

Summer 2011

9. Name and address of person responsible for earth change:

Tim Baker
West Bay Exploration Company
4161 Legion Drive
Mason, MI 48854
Phone: (517) 676-5167 Fax: (517) 676-5224

10. Name and address of person responsible for maintenance:

Tim Baker
West Bay Exploration Company
4161 Legion Drive
Mason, MI 48854
Phone: (517) 676-5167 Fax: (517) 676-5224

11. Send copies of supplemental plat required by Part 615, R 324.201(2)(b) or R 324.504(4), and this form and all attachments, to CEA.

Date sent to CEA March 21, 2011

EARTH CHANGE ACTIVITIES

12. Project description: (Project activities may be permitted sequentially.)

a. Number of well sites 1, 0.48 acres

d. Flow line(s) trenched in off well site* N/A feet, acres

b. Number of surface facility sites N/A, acres

e. Flow line(s) plowed in off well site* N/A feet, acres

c. New access roads N/A feet, acres

*Contact CEA for fee schedule

13. Describe sites for which permits are being sought under Part 301 (Inland Lakes & Streams) None

Describe sites for which permits are being sought under Part 303 (Wetlands) None

List file numbers if known

14 Areas requiring control structures

Will earth changes occur in areas with slopes of 10% or greater; areas where runoff water is likely, such as runs greater than 500' of moderate slope (5% to 10%), narrow valley bottoms, etc.; areas within 500' of a lake or stream; or other areas where sedimentation to a wetland or drainage way may occur?

☒ Yes Attach detail map at scale of 1"=200' or larger, with contour lines at a minimum of 20' intervals OR percent slope descriptions.

Also indicate any of the following erosion control structures that will be utilized. Identify location on map and attach detail plan.

Indicate on plan whether erosion control structures are temporary or permanent.

☐ Diversions ☐ Culverts ☐ Sediment basins ☒ Silt fences ☐ Rip-rap ☒ Berms ☐ Check dams ☐ Other

☐ No

15. Site restoration

☒ Topsoil will be segregated from subsoil and stockpiled OR ☐ No topsoil on site☒ Recontour and revegetate as soon as weather permits. Seed mix☐ Describe other proposed methods of restoration

16. Application prepared by (name)

Wade A. VandenBosch, P.E.

Signature

Date

FOR USE OF COUNTY OR LOCAL ENFORCING AGENT

INSTRUCTIONS TO COUNTY OR LOCAL ENFORCMENT AGENT: Return this form to the applicable field or district office of the Office of Geological Survey within 30 days of receipt. Explain reasons for recommendation or disapproval and conditions required for approval. Include copies of any revisions to the plan.

17. Comments

☐ Conducted on site inspection Date☐ Inspected site with representative of applicant Date18. ☐ Approved ☐ Disapproved

CEA signature

Date

**ENVIRONMENTAL IMPACT ASSESSMENT**

Required for issuance of well permit pursuant to Part 615, 1994 PA 451, as amended. Falsification of this information may result in fines and/or imprisonment. Check all boxes and fill in all blanks which apply to this drilling application. Attach additional pages as necessary.

A. DESCRIPTION OF PROJECT

| | | |
|--|---|---|
| 1. Applicant's name West Bay Exploration Company | Well name and number Haystead 9 SWD | Intended use of well Brine Disposal |
| 2. Mineral ownership , check each category of mineral owners in drilling unit or Antrim Uniform Spacing Plan <input checked="" type="checkbox"/> Private <input type="checkbox"/> State <input type="checkbox"/> Federal <input type="checkbox"/> Other, identify | | |
| 3. Applicable spacing order and drilling unit size <div style="display: flex; justify-content: space-between;"><div><input type="checkbox"/> S.O. 14-9-94 N. Mich. Antrim, 80 acres <input type="checkbox"/> S.O. 1-73 Niagaran, 80 acres <input type="checkbox"/> R 324.301 General rule, 40 acres <input checked="" type="checkbox"/> Field Spacing or Unitization Order (identify below) Order #18-2007 applies <input type="checkbox"/> Antrim USP (identify name, number of acres, and number of drilled and permitted wells)</div><div><input type="checkbox"/> S.O. 3-3-95 S. Mich. Antrim, 40 acres <input type="checkbox"/> S.O. 2-81 Oakland Co. Niagaran, 40 acres <input type="checkbox"/> S.O. 1-86 P.D.C., 640 acres</div></div> <input type="checkbox"/> Administrative exception requested per R324.303 (2). See instructions for applying for an administrative spacing exception <input type="checkbox"/> Exception to spacing requested, petition for hearing filed <input type="checkbox"/> Non-producing well, no drilling unit | | |
| 4. Applicant's right to drill and produce <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Are all mineral interests in the drilling unit under lease and controlled by the applicant/permittee? If no, <input type="checkbox"/> petition filed for compulsory pooling OR <input type="checkbox"/> certified efforts to obtain leases are attached (if allowed by spacing order) <input type="checkbox"/> Not applicable, no drilling unit. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Has applicant obtained all contractual rights needed to locate the well where it is proposed? If no, <input type="checkbox"/> what additional approvals are needed? _____ | | |
| 5. Special considerations <input type="checkbox"/> Replacement well for permit no. _____ or <input type="checkbox"/> Existing well pad <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is well expected to encounter H ₂ S? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is well located in a city, township, or village with a population greater than 70,000? <input type="checkbox"/> Other (describe) _____ | | |

B. IMPACTS AS A RESULT OF DRILLING

| |
|--|
| 1. Access route dimensions <div style="text-align: center;">_____ 1560 _____ feet x _____ 20 _____ feet / 43,560 = _____ 0.72 _____ acres.</div> <p>Provide a detailed description of topography, drainage, soil type(s), direction and percentage of slopes, land cover and present land use for the access route while drilling. Identify route on attached plat.</p> <p>The access route is existing for the Haystead 1-9 & Haystead 1-9A wells, the topography of the ground surface along the access route is relatively level. Drainage is northerly for the first 1260 feet off Palmer and easterly for the last 300 feet. The route is open field. The land use is zoned agricultural. The soil type per the USDA Soil Survey is Brady Sandy Loam.</p> |
| 2. Well site dimensions <div style="text-align: center;">_____ 200 _____ feet x _____ 95 _____ feet / 43,560 = _____ 0.44 _____ acres.</div> <p>Provide a detailed description of topography, drainage, soil types(s), direction and percentage of slopes, land cover and present land use for the well site. Identify well site on attached plat</p> <p>The topography of the existing ground surface at the proposed well site slopes to the north at a grade of approximately 2%. The drainage is northerly to a low marshy area. The land use is zoned agricultural and the land cover is open field. The soil type per the USDA Soil Survey is Ormas-Spinks Complex.</p> |
| 3. Is well site located in residentially zoned area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, R324.407(3) and R324.505 apply. |
| 4. Are drain tiles present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, identify where they exist on attached plat or project map. How will they be handled if they are encountered? . |
| 5. Identify the distance and direction to all of the following, also identify on attached plat a. All buildings, fresh water wells, public roads, power lines and other man-made features within 600' of the well site. The Haystead 1-9/1-9A well is located 91 feet east, and the proposed Haystead 1-9A HD1. The Haystead 3-9 well is located 171 feet east. The Norvell 9 CTB facility is located 530 feet northeast. No other man-made features exist within 600 feet of the proposed well. b. All Type I and Type IIa public water supply wells within 2000' of the well site and all Type IIb and Type III public water wells within 800' of the well site No Type I, II or III public water supply wells were identified within the specified radii. |

(Type I is a community water supply with year-round service ≥ 15 living units or ≥ 25 residents. Type II is a non-community water supply with ≥ 15 service connections or ≥ 25 individuals for not less than 60 days per year. Average daily water production: IIA ≥ 20,000 GPD IIB <20,000 GPD Type III is a public water supply which is neither type I or II.)

(Part B-5 continued)

c. Surface waters, floodplains, wetlands, natural rivers, critical dune areas, threatened or endangered species within 1320' and Great Lake shorelines within 1500' of the well site.

An unnamed tributary to the Raisin River is located 976 feet northeasterly of the well. Marshy areas that drain to the tributary are located 761 feet northeast, 291 feet northeast, and 682 feet southeast of the proposed well. Indiana Bat habitat may exist in the vicinity of the proposed well site, however, this project is unlikely to affect these species because no clearing of suitable bat habitat is anticipated.

d. Describe the actions to be taken to mitigate impacts to any of the items identified in Part B-5 a-c above.

The existing marsh/wetland features will be protected using earthen berms around the well site and strategic soil erosion and sedimentation control measures, such as geotextile silt fence and vegetation preservation outside the limits of the well site and access route. There is no anticipated tree removal or activity that would affect Indiana Bat habitat.

6. Identify the source of fresh water used to drill this well

☐ "Permanent" water well, to be retained after final completion OR used for drinking water
(shall be drilled and installed pursuant to Part 127 of 1979 PA 368, as amended)

☒ "Temporary" water well, will be plugged upon final completion and not used for drinking water
(consult R 324.403 (2) for minimum construction requirements)

☐ Fresh water will be hauled from existing water well or municipal source (identify) _____

☐ No fresh water will be used in drilling this well

7. Pit location and handling and disposal of drill cuttings, muds and fluids

Anticipated depth to groundwater 6' +/- Method determined by Topographical Survey

☒ On site in-ground pit, anticipated dimensions: L 100' W 70' D 5'

☐ Remote in-ground pit, anticipated dimensions: L _____ W _____ D _____

Attach approval of landowner and attach survey of remote pit location

☒ Well drilled below base of Detroit River Anhydrite. Describe how mud and cuttings pursuant to R324.407(7)(iv) will be handled.

Pit fluids below DRA disposed by _____ licensed liquid waste hauler OR

Pit fluids below DRA disposed at the _____ disposal well.

If drill cuttings & mud don't pass paint filter test, they will be disposed at _____ landfill.

☐ No salt cuttings OR

☒ Salt cuttings dissolved and disposed by Seller Tank Truck Service, Inc. licensed liquid waste hauler OR

☒ Salt cuttings hauled to Liberty Environmentalists, Inc., Clark Lake, Michigan landfill

☒ Temporary pit, cuttings and muds disposed at (identify) Liberty Environmentalists, Inc., Clark Lake, Michigan

☐ No in-ground pit, cuttings and muds disposed at (identify) _____

☒ Pit will be solidified.

C. IMPACTS AS A RESULT OF PRODUCTION

1. Kind of well ☐ exploratory ☐ development ☒ Other (describe) Brine Disposal

☐ Antrim project (submit separate project EIA, form EQP 7200-21, for access roads, flow lines, and surface facilities)

where is project EIA found? _____ and complete C-2, omit C-3 and C-4

2. Location of surface facilities (Prior to construction, the District Geologist, pursuant to R324.1002, must also approve all surface facility secondary containment plans.)

☐ Greater than 300' from wellhead. Identify facility location on attached plat and complete C-3 and C-4.

☐ Less than 300' from wellhead. Identify facility location on attached plat, complete C-3, omit C-4

☐ Surface facility exists or was previously approved for construction and is known as _____ complete C-3, omit C-4.

☒ Surface facility location was not determined for this **exploratory** well (omit C-3 and C-4). Submit a separate request for **Surface Facility Location Approval (form 7200-22)**, which includes a Facility Plan, Environmental Impact Assessment, and Soil Erosion and Sedimentation Control Plan, to District Geologist prior to construction pursuant to R324.504.

3. Flow Line Environmental Impact Assessment

☐ Identify flow line location and course from well to the surface facility on attached plat.

Flow line route dimensions _____ feet x _____ feet / 43,560 = _____ acres.

Describe the topography, drainage, soil type(s), direction and percentage of slopes, land cover and present land use along the flow line route

4. Surface Facility Environmental Impact Assessment

a. Dimensions of surface facility _____ feet x _____ feet / 43,560 = _____ acres.

b. Describe the topography, drainage, soil type(s), direction and percentage of slopes, land cover, and present land use

1. Along access route to surface facility

Part C-4, continued

2. At surface facility site

c. Are surface facilities likely to receive oil or gas with H₂S concentration greater than 300 ppm? ☐ Yes ☐ No, if yes, R324.1106(2) applies.

d. Will surface facilities be located in residentially zoned area? ☐ Yes ☐ No, If yes, R324.506 may apply

e. Identify the distance and direction to all of the following, and identify on attached plat

1. Distance and direction to all buildings, fresh water wells, public roads, power lines and other man-made features within 600' of surface facility

2. Distance and direction to any surface waters, floodplains, wetlands, natural rivers, critical dune areas, and threatened or endangered species within 1320' and Great Lakes shorelines within 1500' of the surface facility site

3. Describe the actions to be taken to mitigate impacts to any of the items identified in Part C-4e 1 and 2 above.

4. Distance and direction to all Type I and Type IIa public water supply wells within 2000' of the surface facility site and all Type IIb and Type III wells within 800' of the surface facility

Type I is a community water supply with year-round service ≥ 15 living units or ≥ 25 residents. Type II is a non-community water supply with ≥ 15 service connections or ≥ 25 individuals for not less than 60 days per year. Average daily water production: IIA $\geq 20,000$ GPD IIB $< 20,000$ GPD Type III is a public water supply which is neither type I or II.

5. Method of brine disposal

☐ Dedicated flow line to disposal well _____, permit number _____
☐ Transported by tanker. ☒ Other Injection well _____

6. Method of transporting hydrocarbons past the point of sale

☐ Oil sold through transmission line ☐ Gas sold through transmission line
☐ Oil transported by tanker for sale ☐ Gas flared on site (production restrictions may apply)
☒ Other Not Applicable – Brine Disposal Well _____

D. MITIGATION OF IMPACTS FROM DRILLING AND/OR PRODUCTION

Describe additional measures to be taken to protect environmental and/or land use values

Berms and erosion control measures will be used to protect the areas beyond the access route and pad location. Due to the remote location of this well, it is not anticipated that there will be a negative impact on residents and land use values. The well site berm will contain any accidental releases and control storm water, and the soil erosion plan will be followed. Hospital-type mufflers will be used to mitigate noise. All applicable environmental and safety requirements will be followed.

E. ADDITIONAL PERMITS

Identify additional permits to be sought None

F. SOIL EROSION AND SEDIMENTATION PLAN

Submit a soil erosion and sedimentation plan (form 7200-18) which addresses each well site, surface facility, and flow line route identified in this application. (Refer to requirements under Part 91, 1994 PA 451)

G. ALTERNATE WELL AND SURFACE FACILITY LOCATIONS

Were alternate surface locations considered for this well or surface facility?

☒ No, alternate sites did not seem necessary or more desirable
☐ Yes, the following locations were considered

Why were they rejected in favor of the proposed location?

H. CERTIFICATION

"I state that I am authorized by said applicant to prepare this document. It was prepared under my supervision and direction. The facts stated herein are true, accurate and complete to the best of my knowledge."

Wade A. VandenBosch, P.E.

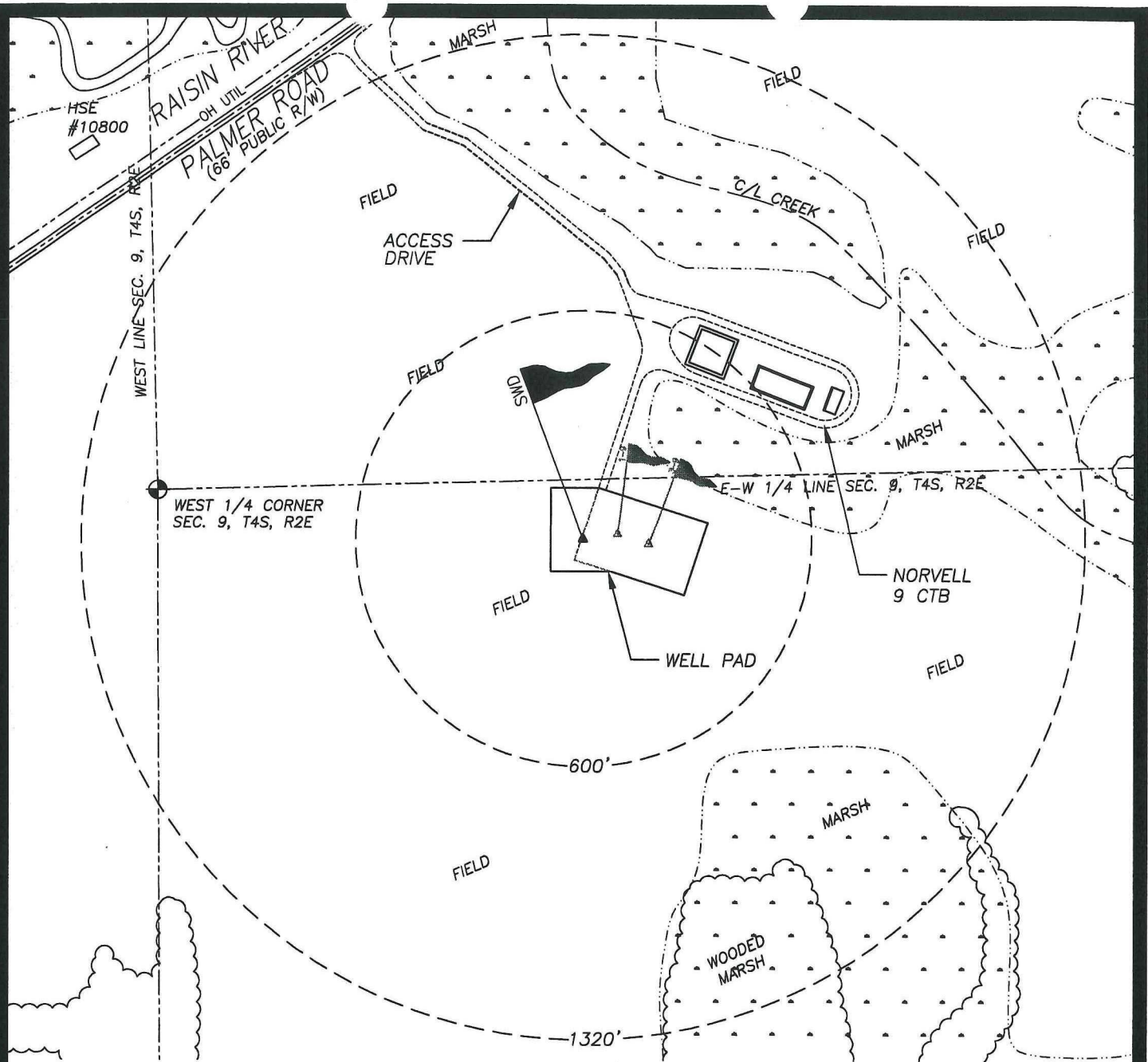
Name and title (printed or typed)

Authorized Signature

Date

4/5/11

Enclose with Application For Permit To Drill



LOCATION: 2459' FEET FROM THE SOUTH LINE AND 1122 FEET FROM THE WEST LINE OF SECTION 9, T4S, R2E, NORVELL TOWNSHIP, JACKSON COUNTY, MICHIGAN.

| | |
|-------|------|
| N14°E | 976' |
| N21°E | 761' |
| N46°E | 291' |
| S32°E | 682' |
| N81°E | 91' |
| N30°E | 530' |
| S86°E | 171' |

C/L CREEK
EDGE OF MARSH
EDGE OF MARSH
EDGE OF MARSH

HAYSTEAD 1-9/1-9A WELL
NORVELL 9 CTB
HAYSTEAD 3-9 WELL



0 200' 400'
SCALE: 1" = 400'



**WESTSHORE
CONSULTING**

Engineers ■ Scientists ■ Surveyors ■ Planners

www.WestshoreConsulting.com

2534 Black Creek Road
Muskegon, MI 49444
(231) 777-3447

250B Washington Avenue
Grand Haven, MI 49417
(616) 844-1260

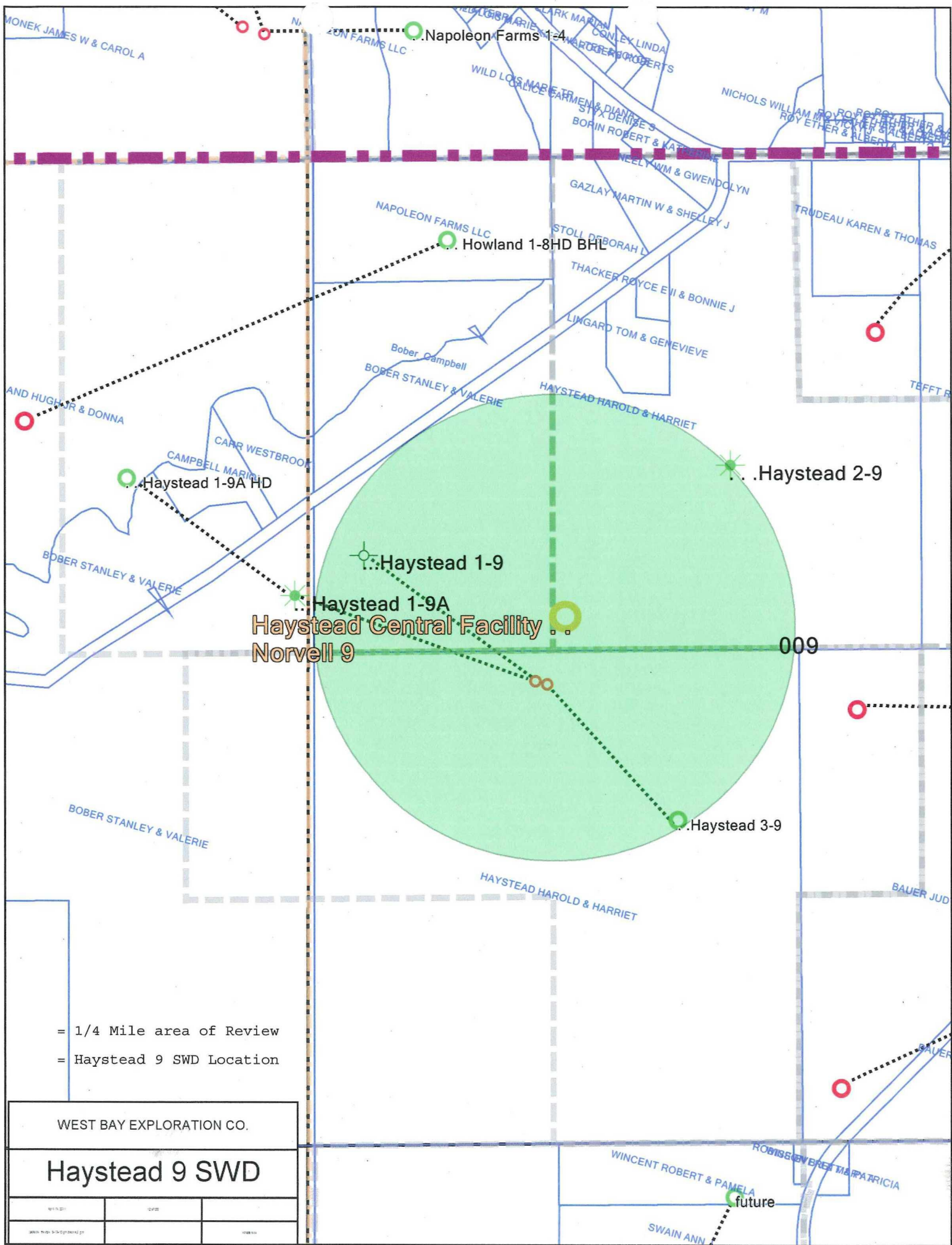
P.O. Box 7
Manistee, MI 49660
(231) 920-5818

**WEST BAY
EXPLORATION COMPANY**
13685 South West Bay Shore Dr.
Traverse City, Mi. 49684

**SURVEY OF THE
HAYSTEAD 9 SWD WELL
LOCATED IN SECTION 9, T4S, R2E,
NORVELL TWP, JACKSON CO.**

Checked: SW
Date: 3/16/11
Drawn by: WAV
Date: 3/16/11
File No.: 323-130
Figure:

1



= 1/4 Mile area of Review
 = Haystead 9 SWD Location

WEST BAY EXPLORATION CO.

Haystead 9 SWD

| | | |
|--------------------|-----------------|--------------------|
| DATE: 10/1/2011 | BY: J. J. J. | REVIEWED: J. J. J. |
| APPROVED: J. J. J. | DATE: 10/1/2011 | BY: J. J. J. |



APPLICATION FOR PERMIT TO:

☒ DRILL ☐ DEEPEN ☐ CONVERT
AND OPERATE A WELL

By authority of Part 615 or Part 625 of Act 451 PA 1994, as amended.
Non-submission and/or falsification of this information
may result in fines and/or imprisonment.

1a. Part 615 Supervisor of Wells

- ☐ Oil and Gas
☒ Brine Disposal
☐ Hydrocarbon Storage
☐ Injection for Secondary
Recovery

Part 625 Mineral Wells

- ☐ Waste Disposal
☐ Brine Production
☐ Processed brine disposal
☐ Storage
☐ Test, fee sched. on rev.

1c. Fee enclosed

- ☒ Yes
☐ No, revision of
application
☐ No, leg of horz
drainhole

2. List all previous permit numbers

3. Fed. ID. No. (do not use SSN)
38-2348162

4. Conformance bond

☒ Blanket ☐ Single well5. ☐ Attached☒ On file

6. Bond number

08784181

7. Bond amount

250,000

8. Applicant (name of permittee as bonded)

West Bay Exploration Company

9. Address

13685 South West Bay Shore Drive
Suite 200
Traverse City, MI 49684

Phone

(231) 946-0200

I authorize DEQ 4 additional days
to process this application.

☒ Yes ☐ No

10. Lease or well name (be as brief as possible)

Haystead

Well number

9 SWD

11. Surface owner

Harold and Harriet Haystead

12. Surface location

NE 1/4 of NW 1/4 of SW 1/4 of Sec 9 T4S R2E

Township

Norvell

County

Jackson

13. If directional, bottom hole location

1/4 of 1/4 of 1/4 of Sec T R

Township

County

14. The surface location for this well is

2459 feet from nearest (N/S) S section line AND 1122 feet from nearest (E/W) W section line

15. Is this a directional well? ☒ No ☐ Yes

If yes, complete line 15. The bottom hole location for this well is

feet from nearest (N/S) section line AND feet from nearest (E/W) section line

16. The bottom hole location (whether straight or directional) of this well is

feet from nearest (N/S) drilling unit line AND feet from nearest (E/W) drilling unit line

17. Kind of tools

☒ Rotary ☐ Cable ☐ Combination

18. Is sour oil or gas expected?

☒ No ☐ Yes ☐ H₂S Cont. plan enclosed

19. Base of lowest known fresh water aquifer

Formation Michigan Marshall Depth 200+/-

20. Intended total depth

MD 3100' TVD

21. Formation at total depth

Salina A1/Niagaran

22. Producing/injection formation(s)

Salina A1/Niagaran

23. Objective pool, field, or roject

Napoleon/Norvell

24. PROPOSED DRILLING, CASING AND CEMENTING AND SEALING PROGRAM

| HOLE | | | CASING | | | CEMENT | | | MUD | |
|------------|-----------------|----------|-----------|-----------|-----------------|------------|-------|--------|--------|----------|
| Depth (MD) | Geol. Formation | Bit Dia. | O.D. Size | Wt/Ft | Grade Condition | Depth (MD) | Sacks | T.O.C. | W.O.C. | Wt. Vis. |
| 350' | Shales | 14 3/4" | 11 3/4" | 42#/ft | H-40 New | 350' | 335 | Surf | 12 | 8.4 50+ |
| 900' | Coldwater Sh | 10 5/8" | 8 5/8" | 24#/ft | J-55 New | 930' | 220 | Surf | 12 | 8.5 40+ |
| 2870' | G-Unit/C-Shale | 7 7/8" | 5 1/2" | 15.5#/ft | J-55 New | 2870' | 450 | Surf | 24 | 9.7 28+ |
| 3100' | Niagaran | 7 7/8" | N/A | Open Hole | | 3100' | - | - | - | 9.7 28+ |

25. DETAIL CEMENTING PROGRAM. IDENTIFY ALL CEMENT CLASSES, ADDITIVES, AND VOLUMES (IN CU. FT.) FOR EACH CASING STRING.

Surface AV=153 cu ft-335 sx Class A w/2% CaCl, (1.18 yield) cement to surf

Intermediate AV=238 cu ft- 55 sx 50/50 POZ w/2% CaCl₂, (1.56 yield), Tail 165 sx Class A w/2% CaCl-Cement to Surf

Production/Injection AV=568 cu ft- Lead-250 Sx 50/50 POZ w/2% CaCl (1.56 yield), 200 sx CIA (1.18 yield) Cement to Surf

26. Send correspondence and permit to

Name West Bay Exploration Company

E-mail anni@wbeco.net

Address 13685 South West Bay Shore Drive, Suite 200, Traverse City, MI 49684

Phone (231) 946-0200

CERTIFICATION "I state that I am authorized by said applicant. This
application was prepared under my supervision and direction. The facts stated
herein are true, accurate and complete to the best of my knowledge."

27. Application prepared by (print or type)

Ann M Baker

Phone

(231) 946-0200

28. Signature

Date

4/27/2011

Enclose permit fee of \$300 for all Part 615 wells; \$2,500 for a Part 625
waste disposal well; or \$500 for a brine production, processed brine
disposal, or storage well. Make checks payable to State of Michigan.

DEQ Cashier use only.

Office of Geological Survey Use Only

| | | | |
|---------------|------------|-------------|--------------|
| Permit number | API number | Date issued | Owner number |
|---------------|------------|-------------|--------------|

West Bay Exploration

| | | | | | |
|-----------------------------|----------------------------------|----------------------|----------------|-------------------|-----------|
| Well Name: | Haystead 1-9 | Date: | 6/2/2010 | Day: | 14 |
| Drilling Contractor: | AES Rig # 2 | Elevations: | 954.54' | Table: | 966.26' |
| Last Casing Set: | 8 5/8" 32 # J-55 3340' | Weather: | 67 Deg | RF: | 966.26' |
| Depth: | Plug Back Depth 3600' Thru 3340' | 7am Activity: | Wait On Cement | KB: | 967.26' |
| Formation: | Clinton | Footage: | 0 | Spud Date: | 5/20/2010 |
| PN: | 60076 | | | | 3:00 AM |

| Intangible Drilling Costs | | Chronological Report | | | | | | | |
|---------------------------|-----------|---|---|--------------|-----|-----------------------|---|------------------|------------|
| Location | | 07.00 - 08.30 Log Hole With Baker/Atlas | | | | | | | |
| Rig Move | | 08.30 - 11.30 TIH | | | | | | | |
| Day Work | \$11,500 | 11.30 - 13.00 Circ Hole, WOO | | | | | | | |
| West Shore | | 13.00 - 17.00 Wait On Cement Trucks | | | | | | | |
| Bits # 5 STC | \$0 | 17.00 - 17.30 Set 1st Plug At 4200' W/120 sks Class A Cement | | | | | | | |
| Water | | 17.30 - 18.30 TOO H To 3600' | | | | | | | |
| Mud-Chemicals | \$2,116 | 18.30 - 19.30 Set Kick Plug At 3600' W/125 sks Class A 3%cc | | | | | | | |
| CMT Service CMCS | \$6,898 | 19.30 - 21.00 TOO H With HWY Pipe | | | | | | | |
| Direct Service DDC | \$0 | 21.00 - 23.00 TOO H Laying Down Drill String | | | | | | | |
| Rentals | \$2,180 | 23.00 - 07.00 WOC, Trip Check HWY Pipe, Check, Monels, Subs, Collars, Kelly, 1 Bad Collar | | | | | | | |
| Mud Logging | \$0 | | | | | | | | |
| Logging | \$23,724 | | | | | | | | |
| Trucking | | | | | | | | | |
| Supervision | \$850 | | | | | | | | |
| Water & Mud Disp. Res | \$0 | B.W.: | 0 | Str Wt: | 0 | RPMs: | 0 | P.P.#: | 0 |
| Csg Crew Premier | | Pump: | | Liner: | | Strokes: | | GPM: | Total GPM: |
| M&S Anchors | | Ideco MM 550 | | 6" | | 62 | | 368 | 368 |
| Superior Inspection | \$4,395 | Cont Emsco DB 550 | | 5.5" | | | | | |
| Charter | | S.H.T. | | @ | | @ | | @ | |
| Double Check | \$0 | Degrees/Feet | | Degrees/Feet | | Degrees/Feet | | | |
| Daily Costs | \$51,663 | Bit No. | | Mud Data | | | | Hours Break Down | |
| Previous Cost | \$529,829 | Size | | M.W. | 9.6 | Gel | | Drig | 0 |
| Accumulative Cost | \$581,492 | Make | | VIS | 28 | P.H. 11 | | Service Rig | 0 |
| Tangible Costs | | Type | | W.L. | | Cake | | Cir WOO | 1.5 |
| Well head | \$5,700 | S/N | | C.L. 140,000 | | Solids 0.1 | | Trip | 7.5 |
| Csg 11 3/4" 430' | \$13,545 | Noz | | P.V. 2 | | L.C.M | | Log | 1.5 |
| Csg 8 5/8" 3328' | \$53,248 | In @ | | Y.P. 2 | | | | WOC trucks | 4 |
| Csg 5 1/2" | | Out @ | | KCL 3% | | | | cement Plugs | 1.5 |
| Daily Costs | \$0 | Footage | | | | | | WOC | 8 |
| Previous Cost | \$72,493 | Hrs | | | | | | | |
| Accumulative Cost | \$72,493 | Grade | | | | | | Total Hrs. | 24 |
| Total Drilling Costs | | Casing Information | | | | | | | |
| Daily Costs | \$51,663 | Csg Size: _____ | | | | Supplier: _____ | | | |
| Previous Cost | \$616,852 | Tallied Ft.: _____ | | | | Tallied Jts: _____ | | | |
| Accumulative Cost | \$668,515 | Ft. Ran: _____ | | | | Jts. Ran: _____ | | | |
| Drilling Supervisor | | Ft. Transferred: _____ | | | | Jts Transferred _____ | | | |
| CRAIG SEARIGHT | | Ft. Left: _____ | | | | Jts. Left: _____ | | | |
| Transferred from: _____ | | | | | | | | | |
| Remarks: | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

**RECORD OF WELL DRILLING OR DEEPENING**

Required by authority of Part 615 Supervisor of Wells or Part 625 Mineral Wells, of Act 451 PA 1994, as amended. Non-submission and/or falsification of this information may result in fines and/or imprisonment.

Permit number/Deepening number
60106

(Submit 3 copies within 60 days of drilling completion.)

☒ Part 615 Oil/Gas Well ☐ Part 625 Mineral Well

Name and address of permittee

West Bay Exploration
13685 S. West Bay Shore Dr #200
Traverse City, MI 49684

Name and address of drilling contractor

McConnel & Scully
142 W. Main St.
Homer, MI 49254

Date drilling began

5/20/10

Date drilling completed

6/28/10

Total depth of well

Driller 4555md, 4317tvd

Formation at total depth

Black River Fm

Elevations

K.B. 967.26 ft. R.F. 966.26 ft. R.T. ft. Grd 966.26 ft

API number

21-075-60076-01-00

Well name and number

Haystead 1-9A

Surface location

NE 1/4 of NW 1/4 of SW 1/4 Section 9 T4S R2E

Township

Norvell

County

Jackson

Footages

North/South

East/West

2472 ft. from South line and 1212 ft. from West line of sec.

Directionally drilled (check one)

☒ Yes ☐ No

Previous permit numbers

none

Subsurface location (if directionally drilled)

SE 1/4 of SE 1/4 of NE 1/4 Section 8 T 4S R 2E

Township

Columbia

County

Jackson

Footages

North/South

East/West

ft. from line and ft. from line of sec.

Feet drilled - cable tools

from to

Feet drilled - rotary tools

from surf to 4589

Casing, Casing Liners and Cementing, Operating Strings**Water Fill Up (F.U.) or Lost Circulation (L.C.) (X)**

| Size | Where set | Cement | T.O.C. | Ft. pulled | Formation | F.U. | L.C. | Depth | Amount |
|--------|-----------|--|--------|------------|-------------|------|------|-------|---------|
| 11 3/4 | 425' | 175 Lite/150 A | | | Black River | | x | 4589m | unknown |
| 8 5/8 | 3340 | 600 Lite/200 A | | | | | | | |
| 5 1/2 | 4572 | 1 st 100 Flowstop 2 nd 200 HalCem | | | | | | | |

Gross Pay Intervals**All Other Oil and Gas Shows Observed or Logged**

| Formation | Oil or Gas | From | To | Formation | Oil or Gas | Depth | Sam- ples | Where Observed (X) | Odor | Pits | Mud Line | Gas Log | Fill Up |
|------------|------------|--------|--------|--------------|------------|-------|--------------|--------------------|------|------|-------------|------------|------------|
| Trenton-BR | Oil | 4400m | 4589m | | | | | | | | | | |
| Trenton-BR | Oil | 4166tv | 4348tv | | | | | | | | | | |
| | | | | not observed | | | | | | | | | |

Depth Correction**Deviation Survey****Plugged Back**

| Depth | Correction | Run at | Degrees | Yes | No | Depth |
|-------|------------|--------|---------|-----|----|-------|
| | | | | | | |
| | | | | | | |
| | | | | | | |

Mailed

Geophysical / Mechanical Logs (list each type run)

| Brand | Log types | Logged intervals |
|-------------|----------------|------------------|
| Baker Atlas | CNL/Density/GR | surf-4555md |
| | | |
| | | |

Notice: Report complete sample and formation record, coring record, and drill stem test information on reverse side.

CERTIFICATION "I state that I am authorized by said owner. This report was prepared under my supervision and direction. The facts stated herein are true, accurate and complete to the best of my knowledge."

Date 10/26/10 Name and title (print) Trish Rising, Field Geologist Signature T Rising

Submit to: OFFICE OF GEOLOGICAL SURVEY,
MICHIGAN DEPT OF ENVIRONMENTAL QUALITY
PO BOX 30256, LANSING, MI 48909-7756

FORMATION RECORD

Attach additional sheets if necessary

API number

21-015 60076 0100

Permit number/Deepening number

60076

Elevation used

967.26

Geologist name

Trish Rising, West Bay Exploration

Tops taken from

☐ Driller's log

☒ Sample log

☒ Electric log

| From | | To | Formation (type, color, hardness) | From | | To | Formation (type, color, hardness) |
|---|---------|---------|---|------|--|----|--------------------------------------|
| Note: if well directionally drilled, add true vertical depth formation tops where appropriate | | | | | | | |
| KOP | 3375md | 3787md | Clinton Fm | | | | |
| | | 3583tvd | dolomite with shaley intervals-drk gray grading to lt gry, brn, dns | | | | |
| | 3787md | 4127md | Utica Fm | | | | |
| | 3583tvd | 3911tvd | shale-drk gry/blk, vfxln, hrd | | | | |
| | 4127md | 4478md | Trenton Fm | | | | |
| | 3911tvd | 4243tvd | dolomite and limestone, lt/drk brn, vfxln, mhd, cln, scat fossils/pyr | | | | |
| | 4478md | 4555md | Black River Fm | | | | |
| | 4243tvd | 4317tvd | limestone and dolomite-md drk brn, arg, wh/off wh dol, mhd, arg | | | | |
| If well was cored, attach core description | | | | | | | |
| DRILL STEM TEST DATA | | | | | | | |
| <p>Operations Office</p> <p>OCT 27 2010</p> <p>Mailed</p> | | | | | | | |
| LIST ATTACHMENTS | | | | | | | |
| OFFICE OF GEOLOGICAL SURVEY USE ONLY | | | | | | | |
| Reviewed by | | | | | | | |

| | | | |
|--|--|--|----------------|
| | | | Date of review |
|--|--|--|----------------|

Operations Office

OCT 27 2010

Mailed



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - OFFICE OF GEOLOGICAL SURVEY
CERTIFICATION OF CASING AND SEALING OF SURFACE HOLE

Required by authority of Part 615 Supervisor of Wells or
Part 625 Mineral Wells, of Act 451 PA 1994, as amended
Non-submission and/or falsification of this information
may result in fines and/or imprisonment

| | | |
|--|--------------------------|--|
| Township Norvell | County Jackson | Permit number 60106 |
| Name and address of permittee West Bay Exploration 13685 S. West Bay Shore Dr #200 Traverse City, MI 49684 | | Well name Haystead 1-9A |
| | | Surface location NE 1/4 of NW 1/4 of SW1/4 Section 9 T4S R2E |
| | | Name and address of drilling contractor McConnel & Scully 142 W. Main St Homer, MI 49254 |

SURFACE HOLE

| Hole diameter (Note reductions) | Depth to bedrock | Base of specified aquifer (see permit) | Total depth of surface hole | Formation at surface casing seat | Date drilling completed |
|------------------------------------|---------------------|---|--------------------------------|-------------------------------------|----------------------------|
| 14 3/4 | 88 | Marshall | 425 | Coldwater Shale | 6/28/10 |

Narrative of unusual drilling circumstances or problems encountered
none

Name and address of geologist/mud logger
**Trish Rising, Field Geologist
West Bay Exploration
12180 Ladd Rd
Brooklyn, MI
49230**

Signature *T. Rising* Date *10 30 10*

SURFACE CASING

| Casing O.D. (in) | Casing depth | Cement type and additives | Amount of cement (sacks) | Volume (bbls) Pumped | Returned to surface | Plug down date & time |
|---------------------|-----------------|------------------------------|-----------------------------|-------------------------|---------------------|--------------------------|
| 11 3/4 | 425 | Lite class A | 175 150 | 47.5 | 40 | 5/21/10 10pm |

Narrative of problems encountered running or cementing casing. Note any cement fallback, grouting, or lost circulation zones.

none

Operations Office

OCT 27 2010

Mailed

I AM RESPONSIBLE FOR THIS REPORT. THE INFORMATION IS COMPLETE AND CORRECT.

Signature of permittee or company officer *T. Rising* Date *10 30 10*

Submit the original and one copy, typewritten or legible printed, within 30 days after drilling is completed to:

OFFICE OF GEOLOGICAL SURVEY
MICHIGAN DEPT OF ENVIRONMENTAL QUALITY
PO BOX 30256
LANSING MI 48909-7756



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - OFFICE OF GEOLOGICAL SURVEY
CERTIFICATION OF CASING AND SEALING OF SURFACE HOLE

Required by authority of Part 615 Supervisor of Wells or
Part 625 Mineral Wells, of Act 451 PA 1994, as amended
Non-submission and/or falsification of this information
may result in fines and/or imprisonment

Permit number

60076

Well name

Haystead 1-9

Township

Norvell

County

Jackson

Surface location

Ne 1/4 of NW 1/4 of SW1/4 Section 9 T 4S R 2E

Name and address of permittee

West Bay Exploration
13685 S. West Bay Shore Dr #200
Traverse City, MI 49684

Name and address of drilling contractor

Advanced Energy Services
PO Box 85
S. Boardman, MI 49680

SURFACE HOLE

| Hole diameter (Note reductions) | Depth to bedrock | Base of specified aquifer (see permit) | Total depth of surface hole | Formation at surface casing seat | Date drilling completed |
|------------------------------------|---------------------|---|--------------------------------|-------------------------------------|----------------------------|
| 14 3/4 | 88 | Marshall | 425 | Coldwater Shale | 6/7/10 |

Narrative of unusual drilling circumstances or problems encountered

none

Name and address of geologist/mud logger

Trish Rising, Field Geologist
12180 Ladd Rd
Brooklyn, MI
49230

Signature

Date

10/19/10

SURFACE CASING

| Casing O.D. (in) | Casing depth | Cement type and additives | Amount of cement (sacks) | Volume (bbls) | | Plug down date & time |
|---------------------|-----------------|------------------------------|-----------------------------|---------------|---------------------|--------------------------|
| | | | | Pumped | Returned to surface | |
| 11 3/4 | 425 | Lite | 175 | | 40Bbls | 10am 5/20/10 |
| | | Class A | 150 | | | |

Narrative of problems encountered running or cementing casing. Note any cement fallback, grouting, or lost circulation zones.

none

Operations Office

OCT 19 2010

I AM RESPONSIBLE FOR THIS REPORT. THE INFORMATION IS COMPLETE AND CORRECT.

Signature of permittee or company officer

Date

Submit the original and one copy, typewritten or legible printed, within 30 days after drilling is completed to:

OFFICE OF GEOLOGICAL SURVEY
MICHIGAN DEPT OF ENVIRONMENTAL QUALITY
PO BOX 30256
LANSING MI 48909-7756



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY – OFFICE OF GEOLOGICAL SURVEY

RECORD OF WELL COMPLETION

By authority of Part 615 or Part 625 of Act 451 PA 1994,
as amended. Non-submission and/or falsification of this
information may result in fines and/or imprisonment.

(Submit 3 copies within 60 days of well completion.)

☒ Part 615 Oil/Gas Well ☐ Part 625 Mineral Well

| | |
|--|----------------------------------|
| Permit number/deepening permit no. 60076 | API number 21-075-60076-00-00 |
| Type of well (after completion) Oil & Gas | |
| Well name & number Haystead 1-9 | |

| | | | | | |
|--|--------------------------------|--|--|--|--|
| Name and address of permittee West Bay Exploration 13685 S. West Bay Shore #200 Traverse City, MI 49684 | | | | | |
| Directionally drilled (check one) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | Previous permit numbers none | | Total depth of well M.D. 4804md T.V.D. 4610tvd | |
| Surface location NE ¼ of NW ¼ of SW ¼ Section 9 T 4S R 2E | | | | Subsurface location (if directionally drilled) SW ¼ of SW ¼ of NW ¼ Section 9 T 4S R 2E | |
| Township Norvell | | County Jackson | | Township Norvell | |
| Footages: North/South 2472 Ft. from South line and 1212 Ft. from West line of Sec. | | Footages: East/West 2310 Ft. from North line and 330 Ft. from West line of Sec. | | County Jackson | |
| Part 615 - oil/gas wells | | | | | |
| Date well completed not | Producing formation(s) none | Injection formation(s) | | Part 625 - mineral wells | |
| | | | | Date of first injection | Disposal formation(s) Solution formation(s) |

COMPLETION INTERVALS(S)

| Date | Number holes | Perforation or open hole interval | Open | |
|------|--------------|-----------------------------------|------|----|
| | | | Yes | No |
| | | not completed | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

STIMULATION BY ACID OR FRACTURING

| Date | Interval treated | Materials and amount used |
|------|------------------|---------------------------|
| | none | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

PRODUCTION TEST DATA

| Oil Bbls/day | Gravity °API | Condensate Bbls/day | Gas MCF/day | Water Bbls/day | H ₂ S Grains/100 ft ³ | B.H.P. and depth |
|-----------------|-----------------|------------------------|----------------|-------------------|--|------------------|
| 0 | - | 0 | 0 | 0 | 0 | - |

CERTIFICATION "I state that I am authorized by said owner. This report was prepared under my supervision and direction. The facts stated herein are true, accurate and complete to the best of my knowledge."

| | | |
|---|-------------------------------|-----------------|
| Name and title (print or type) Trish Rising, Field Geologist | Signature <i>T. Rising</i> | Date 10/6/10 |
|---|-------------------------------|-----------------|

Submit to: OFFICE OF GEOLOGICAL SURVEY
MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
PO BOX 30256
LANSING MI 48909-7756



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - OFFICE OF GEOLOGICAL SURVEY

APPLICATION TO:

- ☒ CHANGE WELL STATUS OR
☐ PLUG AND ABANDON WELL

Required by authority of Part 615 Supervisor of Wells or Part 625 Mineral Wells, of Act 451 PA 1994, as amended. Non-submission and/or falsification of this information may result in fines and/or imprisonment.

☒ Part 615 Oil or Gas Well

☐ Part 625 Mineral Well

| | | | |
|--|--|---|-----------------------------|
| Change of well status requested to: <input checked="" type="checkbox"/> Plug back <input type="checkbox"/> Perforate <input type="checkbox"/> Temporarily abandon <input type="checkbox"/> Convert to _____ <input type="checkbox"/> Other _____ | | Permit number 60076 | Type of well Dry Hole |
| Last production/injection rate and type of fluid | | API number 21-075-60076-00-00 | |
| Brief description of project PLUG BACK FOR RE-DRILL | | Name and address of permittee WEST BAY EXPLORATION COMPANY P.O. BOX 1203 FOWLERVILLE, MI 48836 | |
| | | Well name and number HAYSTEAD 1-9 | |
| | | Well location NE 1/4 of NW 1/4 of SW 1/4 Section 9 T 4S R 2E | |
| | | Township NORVELL | County JACKSON |
| | | Date drilling completed 05/31/10 | Date last produced/utilized |
| Work to be done by AES Rig #2 | | Starting date 06/1/10 | |

CASING AND CEMENTING RECORD

| Hole dia | Casing dia & wt/ft | Depths set | Cement quantity, type, additives | Cement top | Perforations |
|----------|--------------------|------------|---|------------|--------------|
| N/A | 16" | 32' | Driven | N/A | |
| 14-3/4" | 11-3/4", 42#, H-40 | 425' | 175sx 65/35/6% gel + 150sx CLA, 3% CC to both | C/S | |
| 10-5/8" | 8-5/8", 32#, J-55 | 3340' | 600sx 65/35/6% gel, 2% CC + 200sx CLA 3% CC | C/S | |
| 7-7/8" | | 4804' | | | |

Formation record (formation and depth of top, oil, gas and water shows, etc.):

| | |
|-----------------|-------|
| Formation | Depth |
| Coldwater Shale | 264' |
| Clinton | 3278' |
| Trenton | 4095' |
| Black River | 4421' |
| Glenwood | 4786' |
| RTD | 4804' |

Detail proposed procedures:

Circulate well. Plugs are to be set in a hole that is stabilized and static.
Through tbg spot cmt plugs as follows: 120 sxs CLA at 4200' and 125 sxs CLA at 3600' (kick plug).

Name/signature (authorized representative):

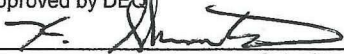
Date:

FOR OFFICE OF GEOLOGICAL SURVEY USE ONLY

DEQ additional requirements:

☐ Yes ☐ No ☒ Not applicable Production tests to commence within 10 days of completion and to be filed

☐ Yes ☒ No Service company records are to be filed

| | | | |
|--|-----------------------------|--------------------------|-------------------|
| Approved by DEQ  | Office: Lansing District | Approval date: 6/1/10 | Termination Date: |
|--|-----------------------------|--------------------------|-------------------|

Submit original and three (3) copies of this application to the District Office within 60 days of change of well status.
Note: Three copies of Record of Well Plugging or Change of Well status (EQP 7200-8) and any requested service company records are to be filed within 60 days of completion at the District Office.

WATER WELL RECORD

FOR OIL, GAS OR MINERAL WELL OPERATIONS

Required under authority of Part 615, Supervisor of Wells
or Part 625 Mineral Wells, of Act 451 PA 1994, as amended
Non-submission and/or falsification of this information
may result in fines and/or imprisonment.

☐ Part 615 Oil/Gas Well

☐ Part 625 Mineral Well

1. Name and address of permittee (own on oil/gas drilling permit)

WEST BAY EXCAVATION CO.
STE. 200 - 13885 S. WEST BAYSHORE DR.
TRAVERSE CITY, MI. 49684

Name and address of water well drilling contractor(s)

KATZ WELL DRILLING INC.
1479-E. MICH. AVE.
BATTLE CREEK, MI. 49014

Well name and number on oil/gas or mineral well permit.

HAYSTEAD 1-9

Permit number (if applicable)

60076

County

JACKSON

Township

NORWELL

Surface location

NE 1/4 NW 1/4 SW 1/4 Sec 9 T 45 R 2E

2. Formation description

 Thickness
of stratum

 Depth to
bottom of

3. Well depth

Date of completion

0-9 SAND

9

9

120

5-17-10

☐ Cable tool ☒ Rotary ☐ Driven ☐ Dug
☐ Hollow rod ☐ Auger ☐ Jetted ☐

 5. CASING ☐ Steel ☐ Threaded

Diameter ☒ Plastic ☒ Welded

5 in. to 51 ft. depth

in. to ft. depth

Grouted Drill-Hole Diameter

8 in. to 51 ft. depth

in. to ft. depth

Height above/below
Surface 50 ft.

Weight 50 lbs./ft.

Drive FORMATION

☒ Yes ☐ No

☐ Not installed

6. Screen

Type _____ Diameter _____

Slot/Gauze _____ Length _____

Set between _____ ft. and _____ ft.

Fittings ☐ K-Packer ☐ Lead Packer ☐ Bremer Check

☐ Blank above screen _____ ft. ☐ Other _____

7. Static Water Level

7 ft. below land surface. Flowing ☐ Yes _____ gpm

8. Water level while pumping (below land surface)

40 ft. after 1 hours at 200 GPM

ft. after hours at GPM

 9. Well Grouted ☒ Yes ☐ No

From 0 to 51 ft.

☐ Neat cement ☒ Bentonite ☐ Other

No. bags of cement 4 additives

 10. Pump ☐ Not installed ☐ Pump installation only

Manufacturer's name McDONALD

Model number 2150073 HP 3 Volts 230

Length of drop pipe 20 ft. capacity 75 G.P.M.

Type: ☒ Submersible

☐ Jet

 11. Well Head ☐ Pitless adapter ☒ 12" above grade

Completion ☐ Basement offset ☐ Approved pit

12. REMARKS (elevation, source of data, water quality, etc.)

LATT. 42.16560

LONG. 84.19353

12. CERTIFICATION "I state that I am authorized by said owner. This report was prepared under my supervision and direction. The facts stated herein are true, accurate and complete to the best of my knowledge."

Name Registration if any

KATZ WELL DRILLING INC. 13-1593

Address

1479-E. MICH. AVE. BATTLE CREEK 49014

Signature

Mark J. Kozak

Date

5-17-10

(Use a 2nd sheet or attach supplements if needed)

Submit original and 3 copies within 30 days after water well completion.
Dist. Original: Permit File Copies: Groundwater, District

OFFICE OF GEOLOGICAL SURVEY
MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
PO BOX 30256
LANSING MI 48909-7756



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - OFFICE OF GEOLOGICAL SURVEY
CERTIFICATION OF CASING AND SEALING OF SURFACE HOLE

Required by authority of Part 615 Supervisor of Wells or
Part 625 Mineral Wells, of Act 451 PA 1994, as amended
Non-submission and/or falsification of this information
may result in fines and/or imprisonment

| | | | |
|--|--|--------------------------|--|
| Township Norvell | | County Jackson | Permit number 60076 |
| Name and address of permittee West Bay Exploration 13685 S. West Bay Shore Dr #200 Traverse City, MI 49684 | | | Well name Haystead 1-9 |
| Surface location Ne 1/4 of NW 1/4 of SW1/4 Section 9 T 4S R 2E | | | Name and address of drilling contractor Advanced Energy Services PO Box 85 S. Boardman, MI 49680 |

SURFACE HOLE

| Hole diameter (Note reductions) | Depth to bedrock | Base of specified aquifer (see permit) | Total depth of surface hole | Formation at surface casing seat | Date drilling completed |
|---|---------------------|---|--------------------------------|-------------------------------------|----------------------------|
| 14 3/4 | 88 | Marshall | 425 | Coldwater Shale | 6/7/10 |
| Narrative of unusual drilling circumstances or problems encountered none | | | | | |
| Name and address of geologist/mud logger Trish Rising, Field Geologist 12180 Ladd Rd Brooklyn, MI 49230 | | | | | |
| Signature <i>T Rising</i> | | | Date 10/19/10 | | |

SURFACE CASING

| Casing O.D. (in) | Casing depth | Cement type and additives | Amount of cement (sacks) | Volume (bbls) Pumped | Returned to surface | Plug down date & time |
|--|-----------------|------------------------------|-----------------------------|-------------------------|---------------------|--------------------------|
| 11 3/4 | 425 | Lite | 175 | | 40Bbls | 10am 5/20/10 |
| | | Class A | 150 | | | |
| Narrative of problems encountered running or cementing casing. Note any cement fallback, grouting, or lost circulation zones. none | | | | | | |

Operations Office
OCT 20 2010

I AM RESPONSIBLE FOR THIS REPORT. THE INFORMATION IS COMPLETE AND CORRECT.

| | |
|--|------|
| Signature of permittee or company officer <i>T Rising</i> | Date |
|--|------|

Submit the original and one copy, typewritten or legible printed, within 30 days after drilling is completed to:

OFFICE OF GEOLOGICAL SURVEY
MICHIGAN DEPT OF ENVIRONMENTAL QUALITY
PO BOX 30256
LANSING MI 48909-7756



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - OFFICE OF GEOLOGICAL SURVEY

RECORD OF WELL DRILLING OR DEEPENING

Required by authority of Part 615 Supervisor of Wells or Part 625 Mineral Wells, of Act 451 PA 1994, as amended. Non-submission and/or falsification of this information may result in fines and/or imprisonment.

Permit number/Deepening number
60106

(Submit 3 copies within 60 days of drilling completion.)

☒ Part 615 Oil/Gas Well ☐ Part 625 Mineral Well

| | | | |
|---|--|--|--|
| Name and address of permittee West Bay Exploration 13685 S. West Bay Shore Dr #200 Traverse City, MI 49684 | | API number 21-075-60076-01-00 | |
| Name and address of drilling contractor McConnel & Scully 142 W. Main St. Homer, MI 49254 | | Well name and number Haystead 1-9A | |
| Date drilling began 5/20/10 | | Surface location NE 1/4 of NW 1/4 of SW 1/4 Section 9 T4S R2E | |
| Date drilling completed 6/28/10 | | Township Norvell | |
| Total depth of well Driller 4555md, 4317tvd | | County Jackson | |
| Formation at total depth Black River Fm | | Footages North/South East/West 2472 ft. from South line and 1212 ft. from West line of sec. | |
| Elevations K.B. 967.26 ft. R.F. 966.26 ft. R.T. ft. Grd 966.26 ft | | Directionally drilled (check one) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Previous permit numbers none | |
| | | Subsurface location (if directionally drilled) SE 1/4 of SE 1/4 of NE 1/4 Section 8 T 4S R 2E | |
| | | Township Columbia | |
| | | County Jackson | |
| | | Footages North/South East/West ft. from line and ft. from line of sec. | |
| | | Feet drilled - cable tools from to | |
| | | Feet drilled - rotary tools from surf to 4589 | |

| Casing, Casing Liners and Cementing, Operating Strings | | | | | Water Fill Up (F.U.) or Lost Circulation (L.C.) (X) | | | | |
|--|-----------|-----------------------------|--------|------------|---|------|------|-------|---------|
| Size | Where set | Cement | T.O.C. | Ft. pulled | Formation | F.U. | L.C. | Depth | Amount |
| 11 3/4 | 425' | 175 Lite/150 A | | | Black River | | X | 4589m | unknown |
| 8 5/8 | 3340 | 600 Lite/200 A | | | | | | | |
| 5 1/2 | 4572 | 1 st 100Flowstop | | | | | | | |
| | | 2 nd 200 HalCem | | | | | | | |

| Gross Pay Intervals | | | | All Other Oil and Gas Shows Observed or Logged | | | | | | | |
|---------------------|------------|--------|--------|--|------------|-------|--------------|------|------|-------------|------------|
| Formation | Oil or Gas | From | To | Formation | Oil or Gas | Depth | Sam- ples | Odor | Pits | Mud Line | Gas Log |
| Trenton-BR | Oil | 4400m | 4589m | | | | | | | | |
| Trenton-BR | Oil | 4166tv | 4348tv | | | | | | | | |
| | | | | not observed | | | | | | | |

| Depth Correction | | Deviation Survey | | Plugged Back | | |
|------------------|------------|------------------|---------|--------------|----|-------|
| Depth | Correction | Run at | Degrees | Yes | No | Depth |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| Geophysical / Mechanical Logs (list each type run) | | |
|--|----------------|------------------|
| Brand | Log types | Logged intervals |
| Baker Atlas | CNL/Density/GR | surf-4555md |
| | | |
| | | |

Notice: Report complete sample and formation record, coring record, and drill stem test information on reverse side.

CERTIFICATION "I state that I am authorized by said owner. This report was prepared under my supervision and direction. The facts stated herein are true, accurate and complete to the best of my knowledge."

| | | |
|------------------|---|-----------------------|
| Date 10 26 10 | Name and title (print) Trish Rising, Field Geologist | Signature T Rising |
|------------------|---|-----------------------|

Submit to: OFFICE OF GEOLOGICAL SURVEY,
MICHIGAN DEPT OF ENVIRONMENTAL QUALITY
PO BOX 30256, LANSING, MI 48909-7756



Job Number: DR100160
 Company: WEST BAY EXPLORATION
 Lease/Well: HAYSTEAD 1-9A
 Location: NORVELL TWP., JACKSON CO.
 Rig Name: ADVANCED # 2
 RKB:
 G.L. or M.S.L.:

State/Country: MICHIGAN / USA
 Declination: 6.36 degrees west
 Grid:
 File name: C:\WINSERVE\ASDRIL~1\2010\HAYSTD19.SVY
 Date/Time: 10-Jun-10 / 12:23
 Curve Name: HAYSTEAD 1-9 (as drilled)

Directional Drilling Contractors SURVEY REPORT

WINSERVE SURVEY CALCULATIONS
 Minimum Curvature Method
 Vertical Section Plane 292.09
 Vertical Section Referenced to Wellhead
 Rectangular Coordinates Referenced to Wellhead

| Measured Depth FT | Incl Angle Deg | Drift Direction Deg | True Vertical Depth | N-S FT | E-W FT | Vertical Section FT | CLOSURE Distance FT | Direction Deg | Dogleg Severity Deg/100 |
|---------------------------------------|----------------------|---------------------------|---------------------------|-----------|-----------|---------------------------|---------------------------|------------------|-------------------------------|
| KICK OFF POINT - TIE @ 3375 MD | | | | | | | | | |
| 3375.00 | 12.70 | 300.20 | 3198.38 | 474.48 | -840.86 | 957.56 | 965.49 | 299.44 | .00 |
| 3406.00 | 13.30 | 294.20 | 3228.59 | 477.65 | -847.05 | 964.50 | 972.45 | 299.42 | 4.76 |
| 3436.00 | 15.10 | 286.80 | 3257.67 | 480.20 | -853.94 | 971.84 | 979.70 | 299.35 | 8.51 |
| 3467.00 | 16.40 | 280.90 | 3287.51 | 482.19 | -862.11 | 980.16 | 987.79 | 299.22 | 6.65 |
| 3498.00 | 18.00 | 280.50 | 3317.12 | 483.89 | -871.11 | 989.14 | 996.49 | 299.05 | 5.18 |
| 3528.00 | 18.50 | 276.30 | 3345.61 | 485.26 | -880.40 | 998.26 | 1005.28 | 298.86 | 4.69 |
| 3559.00 | 17.90 | 270.30 | 3375.06 | 485.82 | -890.06 | 1007.42 | 1014.01 | 298.63 | 6.34 |
| 3590.00 | 17.60 | 267.20 | 3404.59 | 485.62 | -899.50 | 1016.10 | 1022.22 | 298.36 | 3.20 |
| 3620.00 | 17.70 | 266.50 | 3433.18 | 485.12 | -908.58 | 1024.32 | 1029.98 | 298.10 | .78 |
| 3651.00 | 17.70 | 264.70 | 3462.71 | 484.40 | -917.98 | 1032.76 | 1037.94 | 297.82 | 1.77 |
| 3682.00 | 17.50 | 266.10 | 3492.26 | 483.64 | -927.32 | 1041.13 | 1045.87 | 297.54 | 1.51 |
| 3712.00 | 17.90 | 270.30 | 3520.84 | 483.36 | -936.43 | 1049.47 | 1053.82 | 297.30 | 4.46 |
| 3743.00 | 18.60 | 272.40 | 3550.28 | 483.59 | -946.14 | 1058.55 | 1062.56 | 297.07 | 3.10 |
| 3774.00 | 19.70 | 271.40 | 3579.57 | 483.93 | -956.30 | 1068.09 | 1071.77 | 296.84 | 3.70 |
| 3804.00 | 20.70 | 271.70 | 3607.72 | 484.21 | -966.66 | 1077.79 | 1081.15 | 296.61 | 3.35 |
| 3835.00 | 21.10 | 272.10 | 3636.68 | 484.58 | -977.71 | 1088.17 | 1091.20 | 296.36 | 1.37 |
| 3866.00 | 20.90 | 269.60 | 3665.62 | 484.74 | -988.81 | 1098.52 | 1101.24 | 296.12 | 2.96 |
| 3896.00 | 20.90 | 266.50 | 3693.65 | 484.38 | -999.51 | 1108.29 | 1110.69 | 295.86 | 3.69 |
| 3927.00 | 20.70 | 266.10 | 3722.63 | 483.67 | -1010.49 | 1118.20 | 1120.28 | 295.58 | .79 |
| 3958.00 | 20.50 | 266.80 | 3751.65 | 482.99 | -1021.38 | 1128.04 | 1129.82 | 295.31 | 1.02 |
| 3988.00 | 20.40 | 268.90 | 3779.76 | 482.60 | -1031.85 | 1137.59 | 1139.13 | 295.07 | 2.47 |
| 4019.00 | 20.00 | 272.40 | 3808.85 | 482.72 | -1042.55 | 1147.55 | 1148.88 | 294.84 | 4.11 |
| 4050.00 | 19.70 | 277.40 | 3838.01 | 483.61 | -1053.03 | 1157.60 | 1158.77 | 294.67 | 5.56 |

| Measured Depth FT | Incl Angle Deg | Drift Direction Deg | True Vertical Depth | N-S FT | E-W FT | Vertical Section FT | C L O S U R E | | Dogleg Severity Deg/100 |
|-------------------------|----------------------|---------------------------|---------------------------|-----------|-----------|---------------------------|----------------|------------------|-------------------------------|
| | | | | | | | Distance FT | Direction Deg | |
| 4081.00 | 18.70 | 282.30 | 3867.29 | 485.34 | -1063.07 | 1167.55 | 1168.62 | 294.54 | 6.12 |
| 4111.00 | 18.40 | 283.70 | 3895.73 | 487.49 | -1072.36 | 1176.97 | 1177.97 | 294.45 | 1.79 |
| top | | | | | | | | | |
| 4128.00 | 18.29 | 283.70 | 3911.86 | 488.76 | -1077.56 | 1182.27 | 1183.23 | 294.40 | .65 |
| 4142.00 | 18.20 | 283.70 | 3925.16 | 489.79 | -1081.82 | 1186.60 | 1187.53 | 294.36 | .65 |
| 4173.00 | 18.30 | 280.90 | 3954.60 | 491.86 | -1091.30 | 1196.17 | 1197.03 | 294.26 | 2.85 |
| 4203.00 | 19.00 | 277.70 | 3983.03 | 493.41 | -1100.77 | 1205.52 | 1206.29 | 294.14 | 4.13 |
| 4234.00 | 19.10 | 277.70 | 4012.33 | 494.76 | -1110.80 | 1215.32 | 1216.00 | 294.01 | .32 |
| 4265.00 | 18.90 | 277.40 | 4041.64 | 496.09 | -1120.80 | 1225.09 | 1225.68 | 293.88 | .72 |
| 4295.00 | 18.10 | 273.80 | 4070.09 | 497.02 | -1130.27 | 1234.21 | 1234.72 | 293.74 | 4.65 |
| 4326.00 | 18.00 | 272.80 | 4099.57 | 497.58 | -1139.86 | 1243.31 | 1243.73 | 293.58 | 1.05 |
| 4357.00 | 18.00 | 273.10 | 4129.05 | 498.07 | -1149.43 | 1252.36 | 1252.70 | 293.43 | .30 |
| 4388.00 | 18.90 | 273.80 | 4158.45 | 498.66 | -1159.22 | 1261.65 | 1261.92 | 293.28 | 2.99 |
| 4418.00 | 19.10 | 273.50 | 4186.82 | 499.28 | -1168.97 | 1270.92 | 1271.13 | 293.13 | .74 |
| 4449.00 | 19.90 | 273.80 | 4216.04 | 499.94 | -1179.29 | 1280.73 | 1280.89 | 292.97 | 2.60 |
| 4480.00 | 19.70 | 274.20 | 4245.21 | 500.67 | -1189.77 | 1290.72 | 1290.82 | 292.82 | .78 |
| 4510.00 | 19.80 | 273.50 | 4273.44 | 501.35 | -1199.88 | 1300.34 | 1300.41 | 292.68 | .86 |
| 4541.00 | 20.00 | 274.20 | 4302.59 | 502.06 | -1210.41 | 1310.37 | 1310.40 | 292.53 | 1.00 |
| 4579.00 | 20.16 | 273.64 | 4338.28 | 502.95 | -1223.43 | 1322.76 | 1322.77 | 292.35 | .65 |
| TD 1-9A @ 4589 MD | | | | | | | | | |
| 4589.00 | 20.20 | 273.50 | 4347.67 | 503.17 | -1226.87 | 1326.03 | 1326.04 | 292.30 | .65 |



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - OFFICE OF GEOLOGICAL SURVEY

RECORD OF WELL COMPLETION

By authority of Part 615 or Part 625 of Act 451 PA 1994,
as amended. Non-submission and/or falsification of this
information may result in fines and/or imprisonment.

(Submit 3 copies within 60 days of well completion.)

☒ Part 615 Oil/Gas Well ☐ Part 625 Mineral Well

| | |
|------------------------------------|--------------------|
| Permit number/deepening permit no. | API number |
| 60106 | 21-075-60076-01-00 |
| Type of well (after completion) | |
| Oil & Gas | |
| Well name & number | |
| Haystead 1-9A | |

| | | | | | |
|---|------------------------------|---|---------------------------------|--|-------------------------------|
| Name and address of permittee West Bay Exploration 13685 S. West Bay Shore Dr #200 Traverse City, MI 49684 | | | | | |
| Directionally drilled (check one) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | Previous permit numbers 60076 | | Total depth of well M.D. 4589 T.V.D. 4348 | |
| Surface location NE 1/4 of NW 1/4 of SW 1/4 Section 9 T 4S R 2E | | | | Subsurface location (if directionally drilled) SE 1/4 of SE 1/4 of NE 1/4 Section 8 T 4S R 2E | |
| Township Norvell | | County Jackson | | Township Columbia | |
| County Jackson | | Footages: North/South 2472 Ft. from South line and 1212 Ft. from West line of Sec. | | Footages: North/South 2310 Ft. from North line and 20 Ft. from East line of Sec. | |
| East/West | | East/West | | East/West | |
| Part 615 - oil/gas wells | | Part 625 - mineral wells | | Part 625 - mineral wells | |
| Date well completed 6/2/10 | Producing formation(s) BR | Injection formation(s) none | Date of first injection none | Disposal formation(s) none | Solution formation(s) none |

COMPLETION INTERVALS(S)

| Date | Number holes | Perforation or open hole interval | Open | |
|---------|--------------|-----------------------------------|------|----|
| | | | Yes | No |
| 6/24/10 | 4 | 4502-4512' | | X |
| 6/25/10 | 4 | 4412-4430 | | X |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

STIMULATION BY ACID OR FRACTURING

| Date | Interval treated | Materials and amount used |
|---------|------------------|---------------------------|
| 6/24/10 | 4502-4512 | 500g 28% HCl |
| 6/25/10 | 4412-4430 | 500g 28% HCl |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

Operations Office
OCT 7 7 2010
Patterson

PRODUCTION TEST DATA

| Oil Bbls/day | Gravity °API | Condensate Bbls/day | Gas MCF/day | Water Bbls/day | H ₂ S Grains/100 ft ³ | B.H.P. and depth |
|-----------------|-----------------|------------------------|----------------|-------------------|--|------------------|
| 24 | 42 | 0 | 0 | 194 | 0 | not determined |

CERTIFICATION "I state that I am authorized by said owner. This report was prepared under my supervision and direction. The facts stated herein are true, accurate and complete to the best of my knowledge."

| | | |
|---|----------------------------------|------------------|
| Name and title (print or type) Trish Rising, Field Geologist | Signature <i>Trish Rising</i> | Date 10-30-10 |
|---|----------------------------------|------------------|

Submit to: OFFICE OF GEOLOGICAL SURVEY
MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
PO BOX 30256
LANSING MI 48909-7756

**RECORD OF WELL DRILLING OR DEEPENING**

Required by authority of Part 615 Supervisor of Wells or Part 625 Mineral Wells, of Act 451 PA 1994, as amended. Non-submission and/or falsification of this information may result in fines and/or imprisonment.

Permit number/Deepening number

60106

(Submit 3 copies within 60 days of drilling completion.)

☒ Part 615 Oil/Gas Well ☐ Part 625 Mineral Well

Name and address of permittee

West Bay Exploration
13685 S. West Bay Shore Dr #200
Traverse City, MI 49684

Name and address of drilling contractor

McConnel & Scully
142 W. Main St.
Homer, MI 49254

API number

21-075-60076-01-00

Well name and number

Haystead 1-9A

Surface location

NE 1/4 of NW 1/4 of SW 1/4 Section 9 T4S R2E

Township

Norvell

County

Jackson

Footages

North/South

East/West

2472 ft. from South line and 1212 ft. from West line of sec.

Directionally drilled (check one)

☒ Yes ☐ No

Previous permit numbers

none

Subsurface location (if directionally drilled)

SE 1/4 of SE 1/4 of NE 1/4 Section 8 T 4S R 2E

Township

Columbia

County

Jackson

Footages

North/South

East/West

ft. from line and ft. from line of sec.

Feet drilled - cable tools

from

to

Feet drilled - rotary tools

from surf

to 4589

Casing, Casing Liners and Cementing, Operating Strings**Water Fill Up (F.U.) or Lost Circulation (L.C.) (X)**

| Size | Where set | Cement | T.O.C. | Ft. pulled | Formation | F.U. | L.C. | Depth | Amount |
|--------|-----------|-----------------------------|--------|------------|-------------|------|------|-------|---------|
| 11 3/4 | 425' | 175 Lite/150 A | | | Black River | | x | 4589m | unknown |
| 8 5/8 | 3340 | 600 Lite/200 A | | | | | | | |
| 5 1/2 | 4572 | 1 st 100Flowstop | | | | | | | |
| | | 2 nd 200 HalCem | | | | | | | |

Gross Pay Intervals**All Other Oil and Gas Shows Observed or Logged**

| Formation | Oil or Gas | From | To | Formation | Oil or Gas | Depth | Sam- ples | Odor | Pits | Mud Line | Gas Log | Fill Up |
|------------|------------|--------|--------|--------------|------------|-------|--------------|------|------|-------------|------------|------------|
| Trenton-BR | Oil | 4400m | 4589m | | | | | | | | | |
| Trenton-BR | Oil | 4166tv | 4348tv | | | | | | | | | |
| | | | | not observed | | | | | | | | |

Depth Correction**Deviation Survey****Plugged Back**

| Depth | Correction | Run at | Degrees | Yes | No | Depth |
|-------|------------|--------|---------|-----|----|-------|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Nailed

Geophysical / Mechanical Logs (list each type run)

| Brand | Log types | Logged intervals |
|-------------|----------------|------------------|
| Baker Atlas | CNL/Density/GR | surf-4555md |
| | | |
| | | |

Notice: Report complete sample and formation record, coring record, and drill stem test information on reverse side.

CERTIFICATION "I state that I am authorized by said owner. This report was prepared under my supervision and direction. The facts stated herein are true, accurate and complete to the best of my knowledge."

| Date | Name and title (print) | Signature |
|----------|-------------------------------|-----------|
| 10/26/10 | Trish Rising, Field Geologist | T. Rising |

Submit to:

OFFICE OF GEOLOGICAL SURVEY,
MICHIGAN DEPT OF ENVIRONMENTAL QUALITY
PO BOX 30256, LANSING, MI 48909-7756



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - OFFICE OF GEOLOGICAL SURVEY

RECORD OF WELL COMPLETION

By authority of Part 615 or Part 625 of Act 451 PA 1994,
as amended. Non-submission and/or falsification of this
information may result in fines and/or imprisonment.

(Submit 3 copies within 60 days of well completion.)

☒ Part 615 Oil/Gas Well ☐ Part 625 Mineral Well

| | |
|------------------------------------|--------------------|
| Permit number/deepening permit no. | API number |
| 60106 | 21-075-60076-01-00 |
| Type of well (after completion) | |
| Oil & Gas | |
| Well name & number | |
| Haystead 1-9A | |

| | | | | | |
|---|------------------------|-------------------------|--|--|-----------------------|
| Name and address of permittee | | | | | |
| West Bay Exploration | | | | | |
| 13685 S. West Bay Shore Dr #200 | | | | | |
| Traverse City, MI 49684 | | | | | |
| Directionally drilled (check one) | | Previous permit numbers | | Total depth of well | |
| <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | 60076 | | M.D. 4589 T.V.D. 4348 | |
| Surface location | | | Subsurface location (if directionally drilled) | | |
| NE ¼ of NW ¼ of SW ¼ Section 9 T 4S R 2E | | | SE ¼ of SE ¼ of NE ¼ Section 8 T 4S R 2E | | |
| Township | | County | | Township | |
| Norvell | | Jackson | | Columbia | |
| Footages: | | North/South | | East/West | |
| 2472 Ft. from South line and 1212 Ft. from West line of Sec. | | | | 2310 Ft. from North line and 20 Ft. from East line of Sec. | |
| Part 615 - oil/gas wells | | | Part 625 - mineral wells | | |
| Date well completed | Producing formation(s) | Injection formation(s) | Date of first injection | Disposal formation(s) | Solution formation(s) |
| 6/2/10 | BR | none | none | none | none |

COMPLETION INTERVALS(S)

| Date | Number holes | Perforation or open hole interval | Open | |
|---------|--------------|-----------------------------------|------|----|
| | | | Yes | No |
| 6/24/10 | 4 | 4502-4512' | | x |
| 6/25/10 | 4 | 4412-4430 | | x |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

STIMULATION BY ACID OR FRACTURING

| Date | Interval treated | Materials and amount used |
|---------|------------------|---------------------------|
| 6/24/10 | 4502-4512 | 500g 28% HCl |
| 6/25/10 | 4412-4430 | 500g 28% HCl |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

Operations Office
OCT 27 2010
Walter

PRODUCTION TEST DATA

| Oil Bbls/day | Gravity °API | Condensate Bbls/day | Gas MCF/day | Water Bbls/day | H ₂ S Grains/100 ft ³ | B.H.P. and depth |
|--------------|--------------|---------------------|-------------|----------------|---|------------------|
| 24 | 42 | 0 | 0 | 194 | 0 | not determined |

CERTIFICATION "I state that I am authorized by said owner. This report was prepared under my supervision and direction. The facts stated herein are true, accurate and complete to the best of my knowledge."

| | | |
|--------------------------------|------------------|----------|
| Name and title (print or type) | Signature | Date |
| Trish Rising, Field Geologist | <i>T. Rising</i> | 10-26-10 |

Submit to: OFFICE OF GEOLOGICAL SURVEY
MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
PO BOX 30256
LANSING MI 48909-7756



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - OFFICE OF GEOLOGICAL SURVEY

RECORD OF WELL DRILLING OR DEEPENING

Required by authority of Part 615 Supervisor of Wells or Part 625 Mineral Wells, of Act 451 PA 1994, as amended. Non-submission and/or falsification of this information may result in fines and/or imprisonment.

Permit number/Deepening number
60106

(Submit 3 copies within 60 days of drilling completion.)

☒ Part 615 Oil/Gas Well ☐ Part 625 Mineral Well

| | | | |
|---|--|--|--|
| Name and address of permittee West Bay Exploration 13685 S. West Bay Shore Dr #200 Traverse City, MI 49684 | | API number 21-075-60076-01-00 | |
| Name and address of drilling contractor McConnel & Scully 142 W. Main St. Homer, MI 49254 | | Well name and number Haystead 1-9A | |
| Date drilling began 5/20/10 | | Surface location NE 1/4 of NW 1/4 of SW 1/4 Section 9 T4S R2E | |
| Date drilling completed 6/28/10 | | Township Norvell | |
| Total depth of well Driller 4555md, 4317tvd | | County Jackson | |
| Formation at total depth Black River Fm | | Footages North/South East/West 2472 ft. from South line and 1212 ft. from West line of sec. | |
| Elevations K.B. 967.26 ft. R.F. 966.26 ft. R.T. ft. Grd 966.26 ft | | Directionally drilled (check one) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| | | Previous permit numbers none | |
| | | Subsurface location (if directionally drilled) SE 1/4 of SE 1/4 of NE 1/4 Section 8 T 4S R 2E | |
| | | Township Columbia | |
| | | County Jackson | |
| | | Footages North/South East/West ft. from line and ft. from line of sec. | |
| | | Feet drilled - cable tools from to | |
| | | Feet drilled - rotary tools from surf to 4589 | |

| Casing, Casing Liners and Cementing, Operating Strings | | | | | Water Fill Up (F.U.) or Lost Circulation (L.C.) (X) | | | | |
|--|-----------|-----------------------------|--------|------------|---|------|------|-------|---------|
| Size | Where set | Cement | T.O.C. | Ft. pulled | Formation | F.U. | L.C. | Depth | Amount |
| 11 3/4 | 425' | 175 Lite/150 A | | | Black River | | x | 4589m | unknown |
| 8 5/8 | 3340 | 600 Lite/200 A | | | | | | | |
| 5 1/2 | 4572 | 1 st 100Flowstop | | | | | | | |
| | | 2 nd 200 HalCem | | | | | | | |
| | | | | | | | | | |

| Gross Pay Intervals | | | | All Other Oil and Gas Shows Observed or Logged | | | | | | | |
|---------------------|------------|--------|--------|--|------------|-------|--------------|------|------|-------------|------------|
| Formation | Oil or Gas | From | To | Formation | Oil or Gas | Depth | Sam- ples | Odor | Pits | Mud Line | Gas Log |
| Trenton-BR | Oil | 4400m | 4589m | | | | | | | | |
| Trenton-BR | Oil | 4166tv | 4348tv | | | | | | | | |
| | | | | not observed | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

| Depth Correction | | Deviation Survey | | Plugged Back | | |
|------------------|------------|------------------|---------|--------------|----|-------|
| Depth | Correction | Run at | Degrees | Yes | No | Depth |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| Geophysical / Mechanical Logs (list each type run) | | |
|--|----------------|------------------|
| Brand | Log types | Logged intervals |
| Baker Atlas | CNL/Density/GR | surf-4555md |
| | | |
| | | |
| | | |

Notice: Report complete sample and formation record, coring record, and drill stem test information on reverse side.

CERTIFICATION "I state that I am authorized by said owner. This report was prepared under my supervision and direction. The facts stated herein are true, accurate and complete to the best of my knowledge."

| | | |
|------------------|---|-----------------------|
| Date 10/26/10 | Name and title (print) Trish Rising, Field Geologist | Signature T Rising |
|------------------|---|-----------------------|

Submit to: OFFICE OF GEOLOGICAL SURVEY,
MICHIGAN DEPT OF ENVIRONMENTAL QUALITY
PO BOX 30256, LANSING, MI 48909-7756

Attach additional sheets if necessary

21-075 60076 21 00

60076

967.26

Trish Rising, West Bay Exploration

☐ Driller's log☒ Sample log☒ Electric log

| | |
|--------------------------------------|--|
| OFFICE OF GEOLOGICAL SURVEY USE ONLY | |
| Reviewed by | |

| | | | |
|--|--|--|----------------|
| | | | Date of review |
|--|--|--|----------------|

Operations Office

OCT 27 2010

Mailed



Job Number: DR100160
 Company: WEST BAY EXPLORATION
 Lease/Well: **HAYSTEAD 1-9A**
 Location: NORVELL TWP., JACKSON CO.
 Rig Name: ADVANCED # 2
 RKB:
 G.L. or M.S.L.:

State/Country: MICHIGAN / USA
 Declination: 6.36 degrees west
 Grid:
 File name: C:\WINSERVE\ASDRIL~1\2010\HAYSTD19.SVY
 Date/Time: **10-Jun-10** / 12:23
 Curve Name: HAYSTEAD 1-9 (as drilled)

Directional Drilling Contractors SURVEY REPORT

WINSERVE SURVEY CALCULATIONS
 Minimum Curvature Method
 Vertical Section Plane 292.09
 Vertical Section Referenced to Wellhead
 Rectangular Coordinates Referenced to Wellhead

| Measured Depth FT | Incl Angle Deg | Drift Direction Deg | True Vertical Depth | N-S FT | E-W FT | Vertical Section FT | CLOSURE Distance FT | Direction Deg | Dogleg Severity Deg/100 |
|--------------------------------|----------------------|---------------------------|---------------------------|-----------|-----------|---------------------------|---------------------------|------------------|-------------------------------|
| KICK OFF POINT - TIE @ 3375 MD | | | | | | | | | |
| 3375.00 | 12.70 | 300.20 | 3198.38 | 474.48 | -840.86 | 957.56 | 965.49 | 299.44 | .00 |
| 3406.00 | 13.30 | 294.20 | 3228.59 | 477.65 | -847.05 | 964.50 | 972.45 | 299.42 | 4.76 |
| 3436.00 | 15.10 | 286.80 | 3257.67 | 480.20 | -853.94 | 971.84 | 979.70 | 299.35 | 8.51 |
| 3467.00 | 16.40 | 280.90 | 3287.51 | 482.19 | -862.11 | 980.16 | 987.79 | 299.22 | 6.65 |
| 3498.00 | 18.00 | 280.50 | 3317.12 | 483.89 | -871.11 | 989.14 | 996.49 | 299.05 | 5.18 |
| 3528.00 | 18.50 | 276.30 | 3345.61 | 485.26 | -880.40 | 998.26 | 1005.28 | 298.86 | 4.69 |
| 3559.00 | 17.90 | 270.30 | 3375.06 | 485.82 | -890.06 | 1007.42 | 1014.01 | 298.63 | 6.34 |
| 3590.00 | 17.60 | 267.20 | 3404.59 | 485.62 | -899.50 | 1016.10 | 1022.22 | 298.36 | 3.20 |
| 3620.00 | 17.70 | 266.50 | 3433.18 | 485.12 | -908.58 | 1024.32 | 1029.98 | 298.10 | .78 |
| 3651.00 | 17.70 | 264.70 | 3462.71 | 484.40 | -917.98 | 1032.76 | 1037.94 | 297.82 | 1.77 |
| 3682.00 | 17.50 | 266.10 | 3492.26 | 483.64 | -927.32 | 1041.13 | 1045.87 | 297.54 | 1.51 |
| 3712.00 | 17.90 | 270.30 | 3520.84 | 483.36 | -936.43 | 1049.47 | 1053.82 | 297.30 | 4.46 |
| 3743.00 | 18.60 | 272.40 | 3550.28 | 483.59 | -946.14 | 1058.55 | 1062.56 | 297.07 | 3.10 |
| 3774.00 | 19.70 | 271.40 | 3579.57 | 483.93 | -956.30 | 1068.09 | 1071.77 | 296.84 | 3.70 |
| 3804.00 | 20.70 | 271.70 | 3607.72 | 484.21 | -966.66 | 1077.79 | 1081.15 | 296.61 | 3.35 |
| 3835.00 | 21.10 | 272.10 | 3636.68 | 484.58 | -977.71 | 1088.17 | 1091.20 | 296.36 | 1.37 |
| 3866.00 | 20.90 | 269.60 | 3665.62 | 484.74 | -988.81 | 1098.52 | 1101.24 | 296.12 | 2.96 |
| 3896.00 | 20.90 | 266.50 | 3693.65 | 484.38 | -999.51 | 1108.29 | 1110.69 | 295.86 | 3.69 |
| 3927.00 | 20.70 | 266.10 | 3722.63 | 483.67 | -1010.49 | 1118.20 | 1120.28 | 295.58 | .79 |
| 3958.00 | 20.50 | 266.80 | 3751.65 | 482.99 | -1021.38 | 1128.04 | 1129.82 | 295.31 | 1.02 |
| 3988.00 | 20.40 | 268.90 | 3779.76 | 482.60 | -1031.85 | 1137.59 | 1139.13 | 295.07 | 2.47 |
| 4019.00 | 20.00 | 272.40 | 3808.85 | 482.72 | -1042.55 | 1147.55 | 1148.88 | 294.84 | 4.11 |
| 4050.00 | 19.70 | 277.40 | 3838.01 | 483.61 | -1053.03 | 1157.60 | 1158.77 | 294.67 | 5.56 |

| Measured Depth FT | Incl Angle Deg | Drift Direction Deg | True Vertical Depth | N-S FT | E-W FT | Vertical Section FT | CLOSURE | | Dogleg Severity Deg/100 |
|-------------------------|----------------------|---------------------------|---------------------------|-----------|-----------|---------------------------|----------------|------------------|-------------------------------|
| | | | | | | | Distance FT | Direction Deg | |
| 4081.00 | 18.70 | 282.30 | 3867.29 | 485.34 | -1063.07 | 1167.55 | 1168.62 | 294.54 | 6.12 |
| 4111.00 | 18.40 | 283.70 | 3895.73 | 487.49 | -1072.36 | 1176.97 | 1177.97 | 294.45 | 1.79 |
| top | | | | | | | | | |
| 4128.00 | 18.29 | 283.70 | 3911.86 | 488.76 | -1077.56 | 1182.27 | 1183.23 | 294.40 | .65 |
| 4142.00 | 18.20 | 283.70 | 3925.16 | 489.79 | -1081.82 | 1186.60 | 1187.53 | 294.36 | .65 |
| 4173.00 | 18.30 | 280.90 | 3954.60 | 491.86 | -1091.30 | 1196.17 | 1197.03 | 294.26 | 2.85 |
| 4203.00 | 19.00 | 277.70 | 3983.03 | 493.41 | -1100.77 | 1205.52 | 1206.29 | 294.14 | 4.13 |
| 4234.00 | 19.10 | 277.70 | 4012.33 | 494.76 | -1110.80 | 1215.32 | 1216.00 | 294.01 | .32 |
| 4265.00 | 18.90 | 277.40 | 4041.64 | 496.09 | -1120.80 | 1225.09 | 1225.68 | 293.88 | .72 |
| 4295.00 | 18.10 | 273.80 | 4070.09 | 497.02 | -1130.27 | 1234.21 | 1234.72 | 293.74 | 4.65 |
| 4326.00 | 18.00 | 272.80 | 4099.57 | 497.58 | -1139.86 | 1243.31 | 1243.73 | 293.58 | 1.05 |
| 4357.00 | 18.00 | 273.10 | 4129.05 | 498.07 | -1149.43 | 1252.36 | 1252.70 | 293.43 | .30 |
| 4388.00 | 18.90 | 273.80 | 4158.45 | 498.66 | -1159.22 | 1261.65 | 1261.92 | 293.28 | 2.99 |
| 4418.00 | 19.10 | 273.50 | 4186.82 | 499.28 | -1168.97 | 1270.92 | 1271.13 | 293.13 | .74 |
| 4449.00 | 19.90 | 273.80 | 4216.04 | 499.94 | -1179.29 | 1280.73 | 1280.89 | 292.97 | 2.60 |
| 4480.00 | 19.70 | 274.20 | 4245.21 | 500.67 | -1189.77 | 1290.72 | 1290.82 | 292.82 | .78 |
| 4510.00 | 19.80 | 273.50 | 4273.44 | 501.35 | -1199.88 | 1300.34 | 1300.41 | 292.68 | .86 |
| 4541.00 | 20.00 | 274.20 | 4302.59 | 502.06 | -1210.41 | 1310.37 | 1310.40 | 292.53 | 1.00 |
| 4579.00 | 20.16 | 273.64 | 4338.28 | 502.95 | -1223.43 | 1322.76 | 1322.77 | 292.35 | .65 |
| TD 1-9A @ 4589 MD | | | | | | | | | |
| 4589.00 | 20.20 | 273.50 | 4347.67 | 503.17 | -1226.87 | 1326.03 | 1326.04 | 292.30 | .65 |



APPENDIX 5

SPL Inc.
459 Hughes Drive
Traverse City, MI 49686
Phone: (231) 947-5777
Fax: (231) 947-1072

GENERAL WATER ANALYSIS

WorkOrder: T10080299 LANTIS 2-30 WELL

Lab ID: T10080299001
Sample ID: LANTIS 2-30 WELL

Date/Time Received: 8/26/2010 10:51 Matrix: Water
Date/Time Collected: 8/19/2010 12:30

| Method | Parameters | Results | Analyzed |
|---------------|--|------------------|------------------------|
| ANION | | | |
| EPA 310.1 | Alkalinity, CO ₃ ²⁻ as CaCO ₃ | ND mg/l | 09/02/2010 14:19 by MD |
| EPA 310.1 | Alkalinity, HCO ₃ ⁻ as CaCO ₃ | 230 mg/l | 09/02/2010 14:19 by MD |
| EPA 325.2 | Chloride | 174000 mg/l | 09/10/2010 16:27 by MD |
| EPA 375.4 | Sulfate | 315 mg/l | 09/09/2010 14:20 by MD |
| EPA 376.2 | Sulfide | ND mg/l | 09/09/2010 15:49 by JS |
| CATION | | | |
| EPA 200.8 | Calcium | 28400 mg/l | 09/09/2010 21:40 by JS |
| EPA 200.8 | Magnesium | 4870 mg/l | 09/09/2010 22:39 by JS |
| EPA 200.8 | Potassium | 3000 mg/l | 09/09/2010 22:39 by JS |
| EPA 200.8 | Sodium | 37600 mg/l | 09/09/2010 21:40 by JS |
| EPA 200.8 | Barium | 2.25 mg/l | 09/09/2010 22:39 by JS |
| EPA 200.8 | Iron | 81.4 mg/l | 09/09/2010 22:39 by JS |
| OTHER | | | |
| EPA 150.1 | pH | 6.1 SU | 09/03/2010 11:59 by MD |
| EPA 120.1 | Resistivity | 0.0460 ohm-meter | 09/03/2010 00:37 by MD |
| ASTM D1429 | Specific Gravity | 1.193 | 09/08/2010 14:39 by JS |
| | Total dissolved solids (calculated) = | 248498.65 | |